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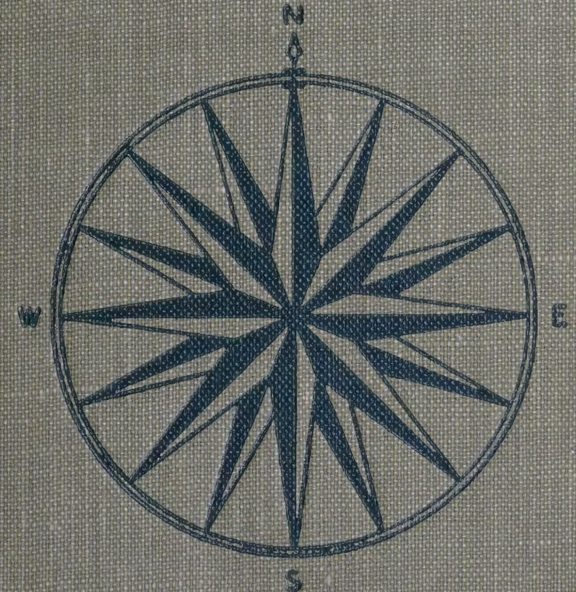

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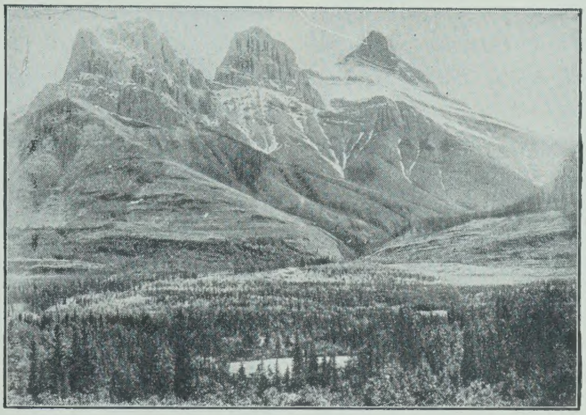
GEOGRAPHY

THE EARTH AS A WHOLE

Shape.—The earth is a huge sphere. If it could be viewed from high up in the sky, it would appear circular like the sun or the full moon. As only a very small portion of its surface can be seen at one time, it appears to be flat. Punch a little hole in a large piece of paper. Hold the paper in front of the school globe so that all its surface is hidden except the little bit seen through the hole. The part which can be seen appears flat. That is because so little of the whole surface of the globe can be seen at one time.

No man has ever been able to go far enough above the earth's surface to see it as a sphere. Yet several facts prove that it is round. Men have travelled right around it. Moreover, when the earth comes between the sun and the moon, the shadow which it casts on the moon is always circular. When a ship puts out to sea, the hull is the first part of it to disappear. The tops of the masts or the funnels and the trail of smoke can be seen long after the hull is hidden. As the masts of the ship will always disappear in the same length of time, no matter in what direction the ship is travelling, the earth must be a sphere.



The Three Sisters, Rocky Mountains, Alberta

Size.—The distance around the earth, or the length of its circumference, is about 25,000 miles. This means that travelling in a train at fifty miles an hour, day and night without a stop, it would take twenty whole days to complete a journey around the world, if such a journey were possible. As the earth is not a perfect sphere, the longest distance around it east and west is forty-two miles greater than the longest distance around it north and south.

Surface.—The surface of the earth is partly land and partly water. Of course, there is land underneath all the water, no matter how deep the water may be. Land underlies the great oceans, which in some places are more than five miles deep, just as it underlies the smallest stream or pond. Bodies of water on the earth are just hollows filled with water.

By far the greater part of the globe is covered with water. In fact, only about one-quarter of its surface is dry land. The *Pacific Ocean* alone is considerably larger in area than all the land in the world.

The land which forms part of the earth's surface is not in a single large block. It is divided by the oceans into two great masses. One of these masses is formed by the two continents of *North America* and *South America.* These continents are called the *New World,* because they became known to our forefathers only a few hundred years ago. The other contains the three continents of *Europe, Asia,* and *Africa,* which are called the *Old World.* Since Europe and Asia form really a continuous land mass, these two continents are often considered as one, under the name *Eurasia.*

Besides these two huge masses of land, there is the comparatively small continent of *Australasia,* lying far to the south-east of

Asia. It is entirely separated by the ocean from all the other continents.

These continents, however, do not contain all the land in the world, even if the islands which lie close to their shores are included in them. There is another great mass of land far to the south. It is called the *Antarctic Continent.* Very little is known about it, for it is covered deep with ice and snow, and is, therefore, quite useless to man.

Then, too, there are thousands of islands in the oceans which are so far from any of the continents that they cannot be considered part of any of them. They range in size from tiny islets, too small to be shown upon a map, to large islands like *Hawaii.* Their combined area, however, is much less than that of Australasia.

The oceans are not entirely separated from one another. They are all connected, so that it is possible for a ship to reach any seaport in the world by passing, if necessary, from ocean to ocean.

The shores of the *Arctic Ocean* are formed by the northern coasts of Asia, Europe, and North America. Between Asia and North America is a narrow strait, called *Bering Strait,* which connects the Arctic and Pacific Oceans. The much wider gap between Europe and North America connects the Arctic Ocean with the *Atlantic Ocean.* This gap is broken by the large island of *Greenland* lying close to the coast of North America, and by the smaller island of *Iceland* farther to the east.

The west coast of the American continents forms the eastern shore of the Pacific Ocean, while the east coasts of Asia and *Australia* are its western limits. The Southern Pacific is studded with thousands of beautiful islands.

The Atlantic Ocean extends southward from the Arctic Ocean between the east coasts of the American continents and the west coasts of Europe and Africa. It is much narrower than the great Pacific. Since, however, it lies between the continents of North America and Europe, in which live the most progressive nations of the world, the number of ships plying on its waters is very great. The *Indian Ocean* lies in the basin formed by Africa on the west, Asia on the north, and Australasia on the east.

South of Africa, Australasia, and South America there is no dividing line between the oceans. A ship can sail right around the world to the south of these continents without meeting land at all.

The most southerly parts of the Pacific, Atlantic, and Indian Oceans form the *Antarctic Ocean.* It surrounds the unknown Antarctic Continent. No one knows how much of this area is land and how much is water. Thick ice covers all the land and extends over part of the water. Its edge forms a steep cliff of ice, sometimes hundreds of feet high. It is difficult to find a place in this cliff where it is possible to make a landing.

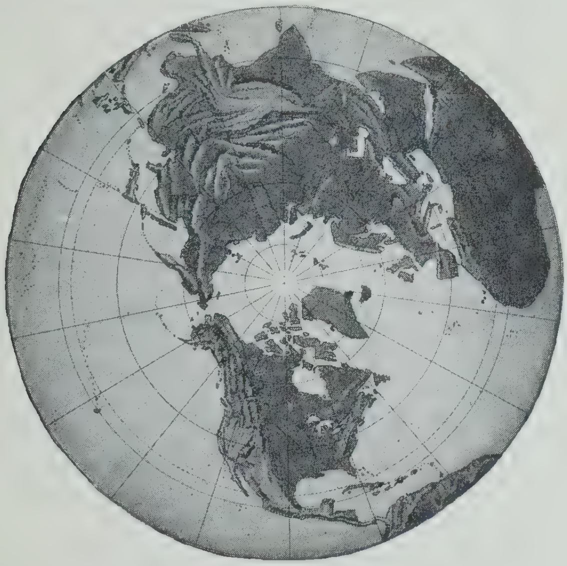
Rotation, Axis, Poles, Equator.—Just as the school globe, which is a good model of the earth on a small scale, turns, or rotates, on a wire, so the earth rotates about a line running through it. Of course, this line is purely imaginary, the earth turning in the same way that a baseball whirls when thrown by an expert pitcher. This line is called the *axis* of the earth. The two points on the surface of the earth about which it whirls are called the *poles.* These points are located at the ends of the axis. The *North Star,* or *Pole Star,* as it is also called, is always over the *north pole.* The *south pole* is at the opposite side of the earth.

Both poles have been reached. In 1909 Robert Peary, a daring United States sailor, reached the north pole. About three years later a bold Norwegian explorer named Roald Amundsen succeeded in reaching the south pole. Captain Scott, of the British Navy, also reached the south pole just a few months after Amundsen, but perished on the return journey.

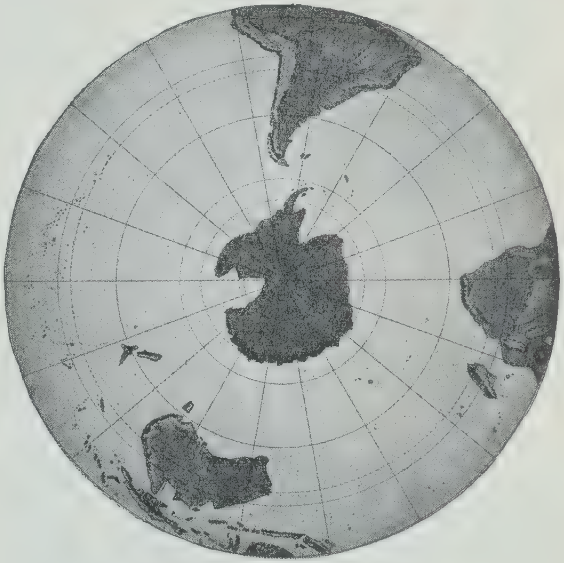
When we speak of a man going *north,* we mean that he is moving directly towards the north pole, no matter where he happens to be on the earth's surface. In the same way, *south* means towards the south pole. Halfway between the two poles is an imaginary line joining all the points in the world which are equally distant from the two poles. This line is called the *equator*. The equator is an east and west line. Standing upon the equator and facing the north pole, the *east* lies to the right, the *west* to the left.

The Hemispheres.—The line of the equator cuts the surface of the globe into two equal parts. These are called *hemispheres*. The *Northern Hemisphere* is the half of the world lying between the equator and the north pole. The *Southern Hemisphere* lies between the equator and the south pole.

Most of the land in the world lies in the Northern Hemisphere, which includes North America, Europe, and Asia. The Southern Hemisphere is nothing but water, with the exception of part of the continents of Africa and South America, all Australia, *Antarctica*, and some islands. The Northern Hemisphere is often called the *Land Hemisphere* and the Southern Hemisphere the *Water Hemisphere*.



The Northern Hemisphere



The Southern Hemisphere

The earth is also divided into hemispheres by a line drawn around it through the poles. The hemisphere which contains the continents of North and South America is called the *Western Hemisphere*. The other half is called the *Eastern Hemisphere*. *See page 10.*

Latitude and Longitude.—In marking the location of a man's farm it may be said to be so many miles east or west or north or south of a certain city or town. Location is always determined by comparing a place with some other place whose situation is definitely known.

In the same way, places on the earth's surface are located by comparison with certain fixed points. North and south locations are made by comparison with the position of the equator. Distance from the equator is called *latitude*. This distance, however, is not usually expressed in miles. The term *degree* is used. A degree is the three-hundred-and-sixtieth part of the circumference of a circle. Since the circumference of the earth is about 25,000 miles, a degree of latitude is about sixty-nine miles in length. Instead of the word "degrees," the symbol ° is generally used.

All places north of the equator are said to be in *north latitude*; all places south of the equator are in *south latitude*. Since the distance from the equator to either pole is one-quarter of the circumference of the earth, there are 90° of north latitude and 90° of south latitude. These are numbered from 0° at the equator to 90° at the poles.

The globe and maps of countries show lines indicating latitude. These lines are called *parallels of latitude*, since they are all parallel to the equator.

But to locate the position of a place on the earth's surface, it is necessary to know not only the parallel of latitude on which it lies, but also its position on that parallel. This is indicated by means of *meridians of longitude.* These are lines running directly north and south from pole to pole. A degree of longitude is $\frac{1}{360}$ of the distance around the earth on any parallel of latitude. At the equator, the distance between two meridians 1° apart is roughly $\frac{1}{360}$ of 25,000 miles. The distance represented by 1° of longitude becomes less and less as the poles are approached, until at last all the meridians meet at the poles. For this reason, we cannot find so easily the distance in miles which is represented by a degree of longitude. It varies from about sixty-nine miles at the equator to nothing at the poles.

The meridian which passes through *Greenwich* is chosen by the British people as the one with which to compare all the others. The reason for this choice is that the Royal Observatory is located at Greenwich, in *London, England.* This *prime meridian,* or first meridian, as it is called, is numbered 0°. All places east of this are in *east longitude* until at 180° the opposite side of the earth is reached. All west of the prime meridian, as far as 180°, are in *west longitude.*

By the use of these two sets of circles upon the globe it is possible with little trouble to locate any spot on the earth's surface.

The Tropics and the Torrid Zone.—The lines known as the *Tropic of Cancer* and the *Tropic of Capricorn* are really parallels of latitude. The Tropic of Cancer is the parallel of 23½° north latitude, and the Tropic of Capricorn is that of 23½° south latitude. The distance between the tropics is more than 3200 miles—a distance about equal to the width of the Dominion of Canada along its southern boundary.

The wide belt which girdles the earth between the two tropics is called the *Torrid Zone.* This is the warmest part of the earth's surface. Every day in the year within the Torrid Zone the sun rises high in the sky, so that its rays beat down almost directly upon that part of the earth at all seasons of the year. Within the tropics there is no winter season, and, except on the tops of high mountains, frost and snow are unknown. Downpours of rain are common in this hot central belt. Plants flourish in such a hot, moist area, so that the land within the Torrid Zone is for the most part covered with a dense and luxuriant vegetation.

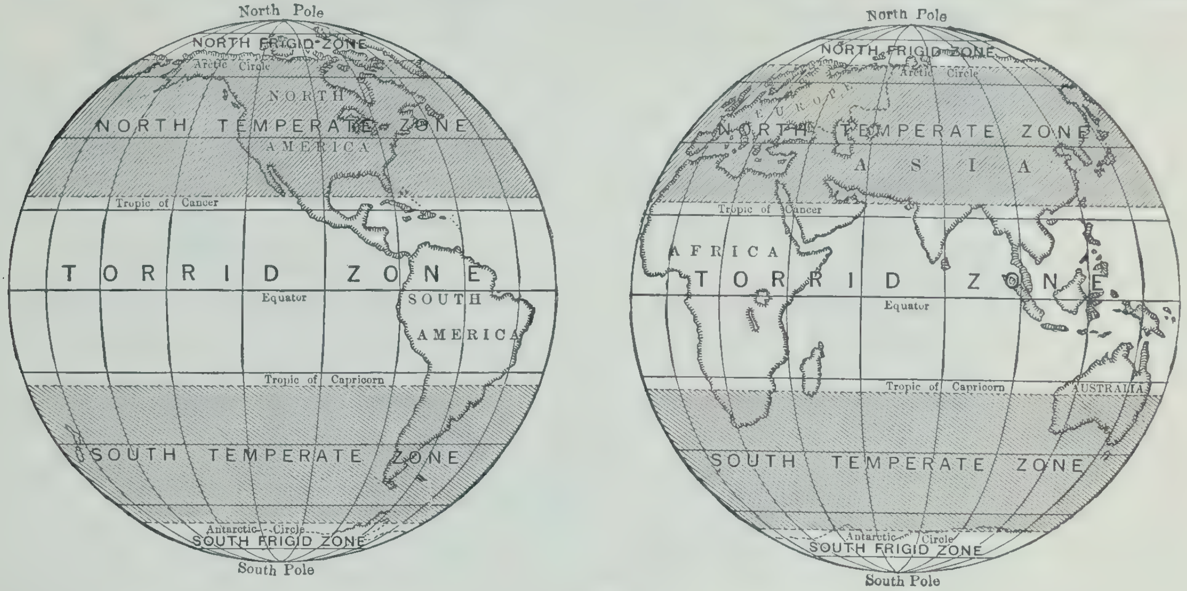
The Arctic and Antarctic Circles and the Temperate Zones.—Far to the north of the Tropic of Cancer is the *Arctic Circle.* It is the parallel of 66½° north latitude. Far to the south of the Tropic of Capricorn is the *Antarctic Circle*—the parallel of 66½° south latitude. Between the Tropic of Cancer and the Arctic Circle is the *North Temperate Zone.* That part of the earth's surface between the Tropic of Capricorn and the Antarctic Circle is the *South Temperate Zone.*

In general, the Temperate Zones have less hot weather than has the Torrid Zone. The sun's rays, even in summer, do not fall so directly upon the surface of the earth in the Temperate Zones, and so do not heat it to so high a temperature. The rainfall is not so great. Instead of warm weather the year around, as in the Torrid Zone, the Temperate Zones have distinct warm and cold seasons—our summer and winter.

The Frigid Zones.—The area surrounding the north pole and bounded on the south by the Arctic Circle is called the *North Frigid Zone.* In this part of the world the winters are extremely long and cold and dark, while the summers are so short that the ground thaws out for only a few inches below the surface. Only a few people live in the North Frigid Zone.

The *South Frigid Zone* is the area between the Antarctic Circle and the south pole. It is even more bleak and desolate than the Arctic regions. The south pole is surrounded by a vast expanse of ice, hundreds of feet thick. No people at all live in this area. Even animals are much rarer than in the far north, and a few hardy species of birds are almost the only living things to be found.

There is, of course, no sudden change in temperature or seasons at the dividing lines between these zones. The change is very gradual indeed. For instance, there is little difference in temperature or in seasons between the southern part of the North Temperate Zone and the northern part of the Torrid Zone, or between the northern part of the North Temperate Zone and the southern part of the North Frigid Zone.



The Zones

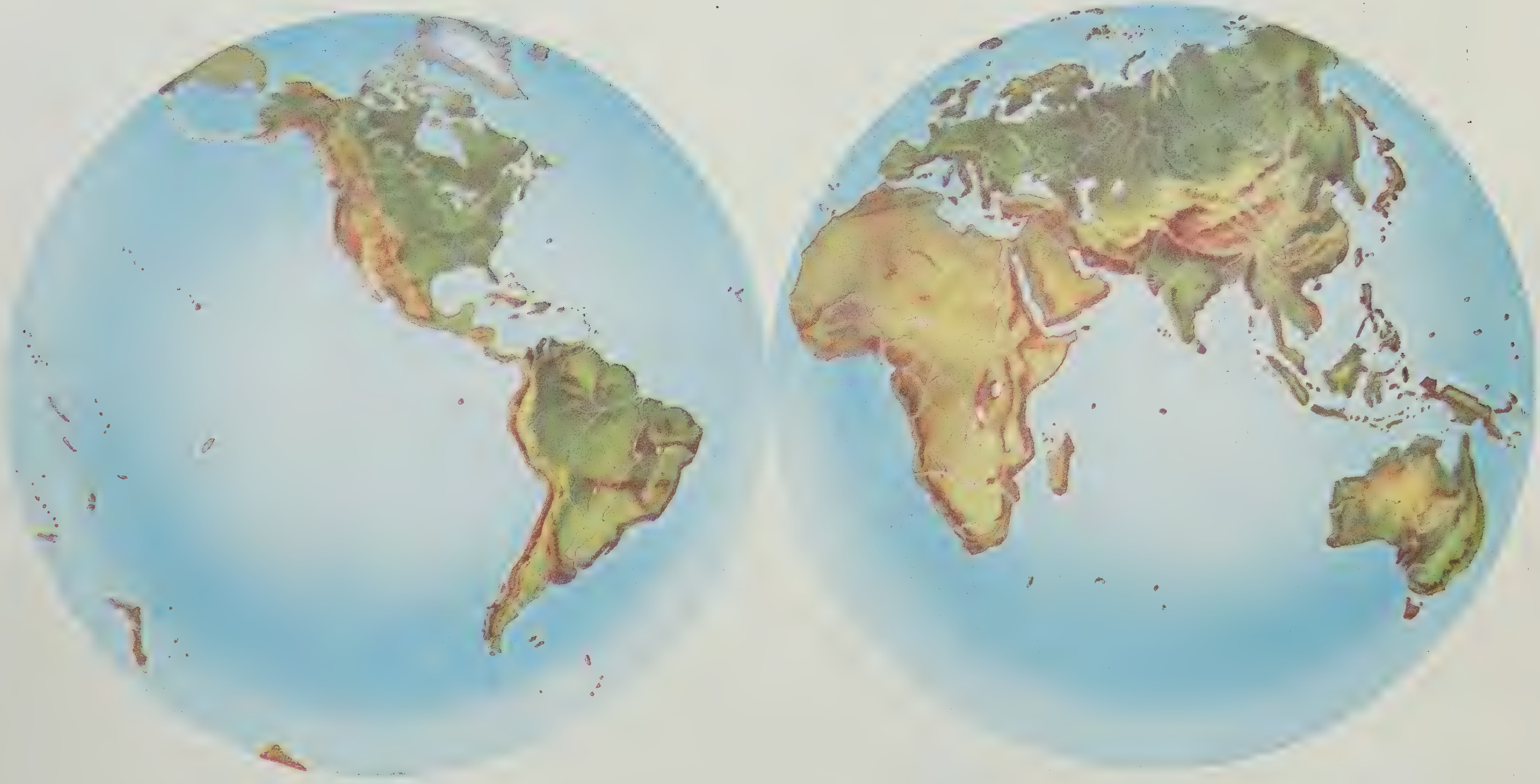
Land Life. — Wherever there is enough soil, heat, sunshine, and moisture to allow them to grow, plants are found. Many plants are of great importance to man, since they provide him with materials for food, clothing, shelter, and tools, and because they provide food for animals, which also help to supply his needs.

All plants do not require the same kind of soil, or the same amount of heat, sunshine, and moisture. Some flourish in the warm, moist regions of the earth; others cannot endure the continuous heat of the tropics. Some are adapted to a dry, hot climate; others to a wet, cold climate. Therefore plants vary widely in different parts of the world.

It would be impossible even to attempt to describe fully the many varieties, or even the chief varieties, of plants found upon the earth. Three main types of vegetation areas, however, may be mentioned: *forest areas*, in which there is sufficient heat and moisture to allow the growth of trees; *grass-lands*, where, owing to a smaller supply of water, trees are absent, but where grasses find enough for their needs; and *deserts*, in which, since there is little or no moisture, only a few plants which are able to withstand drought can grow.

On the Border of a Pine Forest—Northern Canada

These great vegetation areas, of course, are not separated from one another by definite lines. Between dense forests and adjoining grass-lands is always an area in which both trees and grasses are found. Between grass-lands and deserts there is a similar area in which the grass gradually grows thinner and poorer as the desert is approached.



THE WESTERN HEMISPHERE

THE EASTERN HEMISPHERE

PHYSICAL MAP OF THE WORLD IN HEMISPHERES

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In the extreme north the great ice-cap surrounding the pole prohibits all plant life. This area is, therefore, a real desert, and, indeed, is called the *ice-desert.*

Farther south the sun is warm enough to thaw the surface of the ground during the short summer, and a few plants, chiefly mosses, lichens, and low bushes, grow. The desolate, frozen plains of the far north are called *tundras.* They are found along the northern coasts of North America, Europe, and Asia. The inhabitants of the tundra depend upon animals for food and clothing, as the land produces little or no vegetation fit for human food.

The Musk-ox

The musk-ox is found on the tundra of Northern Canada. It is now protected, as there is danger of its becoming extinct.

Still farther south, in the northern part of the Temperate Zone, is a broad belt of forest. The trees composing it are adapted to life in a cold climate. Among them are found the pine, the hemlock, the spruce, the poplar, the birch, and the willow. There are in the northern forest many fur-bearing and other animals such as the elk and the moose, and hunting is the chief occupation of its few inhabitants. Lumbering is also carried on along its southern border, where the trees are largest and nearest to settlements of people.

South of the northern forest is a forest of a different character, in which broad-leaved hardwoods, such as the oak, the beech, and the maple, are found. These trees require much rain. Consequently, these hardwood forests are found chiefly along the coasts, or in inland areas into which rain-bearing winds can penetrate. In the drier districts, as in the central part of North America, are found broad grass-lands.

By far the greater part of the North Temperate Zone consists of the areas of northern forest, hardwood forest, and grass-lands. Where the forest has been cleared, or where the grass-lands have been brought under cultivation, crops of grain, fodder plants, fruits, and vegetables are grown. The cultivated plants of the Temperate Zone are the best food plants of the world. The grass-lands provide rich pasturage for sheep, horses, and cattle. In addition, the forest provides plenty of good lumber for building and tools. These are some reasons why the most progressive and prosperous peoples of the world live in the Temperate Zone.

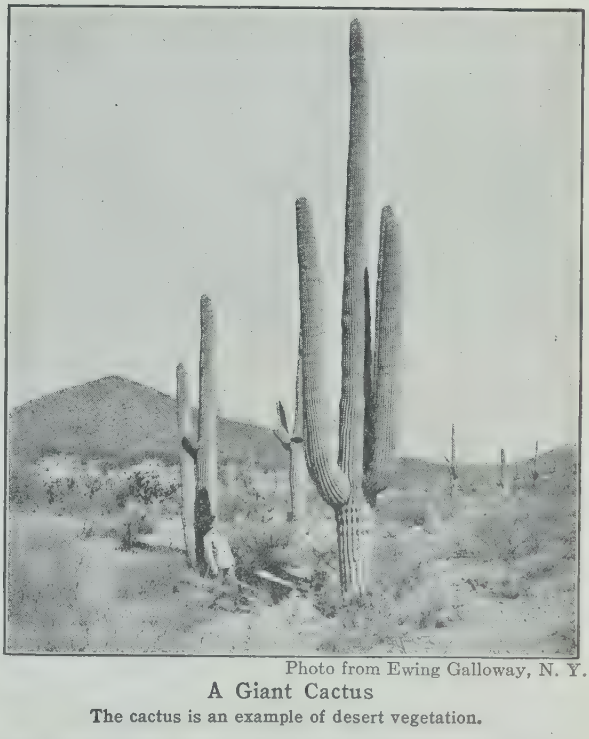
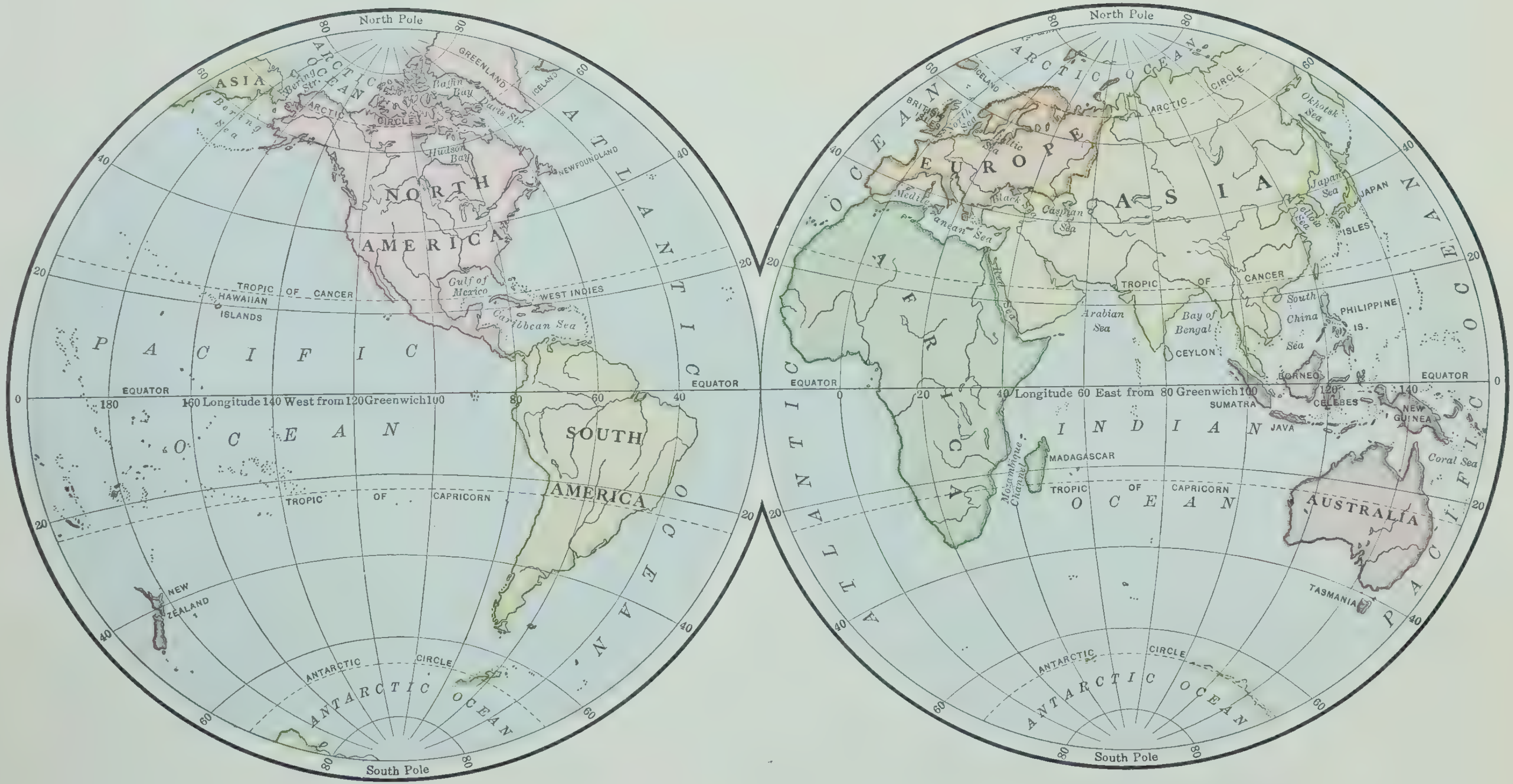


Photo from Ewing Galloway, N. Y.

A Giant Cactus

The cactus is an example of desert vegetation.

The Temperate forest changes in character towards the Tropic of Cancer. Many trees



THE WESTERN HEMISPHERE

THE EASTERN HEMISPHERE

THE WORLD IN HEMISPHERES

unknown farther north, such as palms and palmettos, make their appearance. Such a forest is called a *sub-tropical forest.*

The regions near the tropics have but one season of heavy rainfall a year. At that time grass and flowers spring up with great rapidity and grow to immense size. But after the rains are over, the great heat soon withers the vegetation. The dried grass, however, still provides nourishing food for animals. Such tropical grass-lands are called *savannas.* They are often dotted with clumps of small trees, giving them a beautiful, park-like appearance. The savannas are the home of many large, grass-eating animals, as well as the flesh-eaters, such as lions and tigers, which prey upon them. Hunting and cattle-raising are the chief occupations of the people of the savannas.

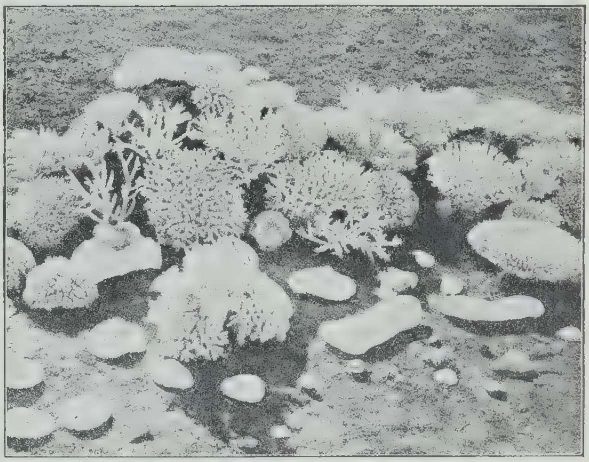
In the Torrid Zone, wherever the rainfall is abundant, the great heat and bright sunshine favor rapid growth, and tangled forests and jungles extend for many miles. In them, owing to the denseness of the forest, both people and ground animals are comparatively few. There are, however, many birds and insects, and a large number of animals adapted to life among the trees. There are tree-frogs, tree-snakes, tree-lizards, and monkeys in great numbers.

Passing through the Southern Hemisphere from the south pole to the Torrid Zone, the same vegetation areas occur in about the same order—ice-desert, tundra, temperate forest, sub-tropical forest, savanna, and tropical forest.

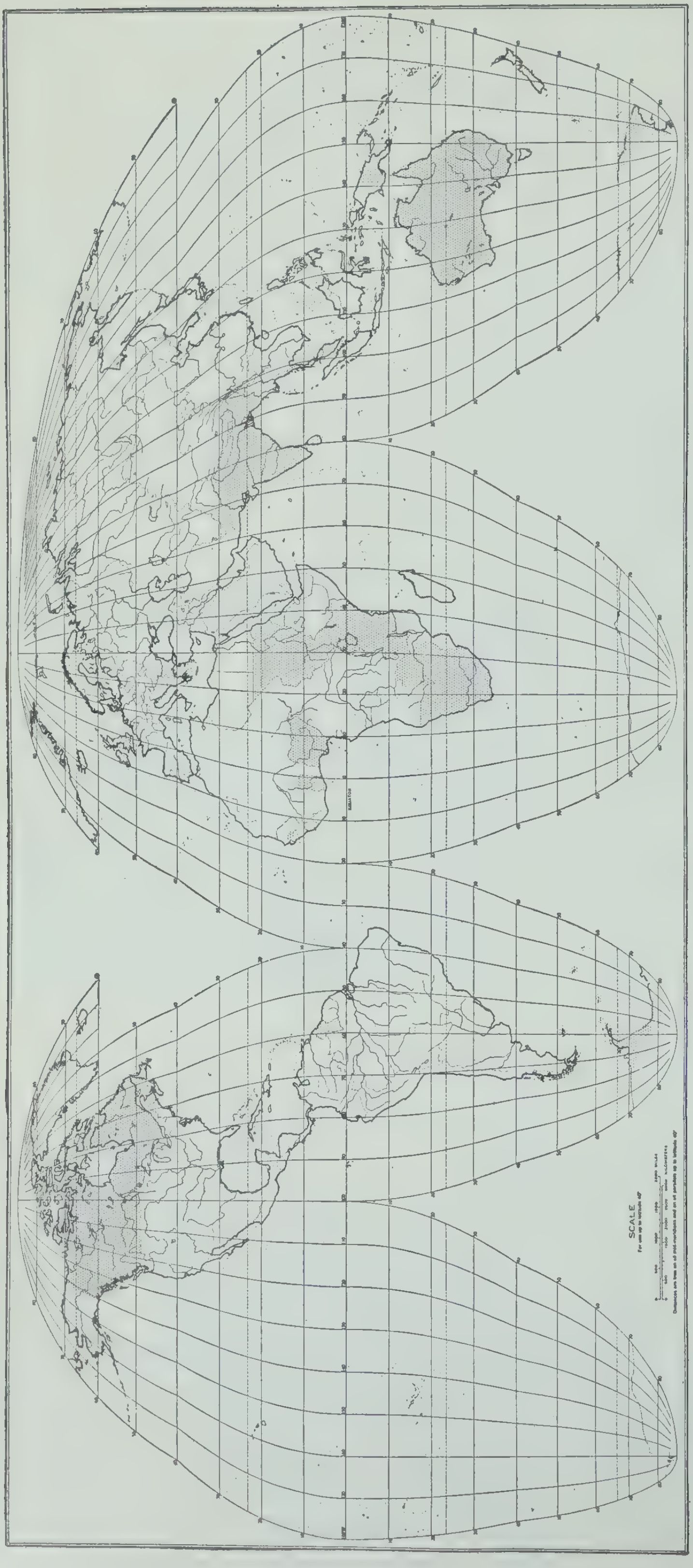
There are, however, several large regions where vegetation is almost entirely absent because of the lack of rain. The vegetation of such desert areas consists entirely of plants able to endure long periods of drought. The cactus, for instance, has thick, fleshy stems in which it stores up water. Since there are so few plants in the desert, there can be little animal life there. There are only a few small animals and snakes which prey upon the animals, and some insects and the lizards and birds which eat them. All the continents contain a certain amount of desert-land.

Wherever underground water comes to the surface of the desert, or wherever a stream flows into it from some wetter district, the vegetation becomes more abundant. Low bushes and dwarf trees, with occasional stretches of grass-land, are found. Such an area is called a *semi-desert.* It generally forms a border around the almost lifeless desert. In it live a few people, who wander about with their flocks in search of pasture.

In mountainous regions vegetation is affected not only by latitude and rainfall but also by altitude. A snow-capped mountain in the Torrid Zone shows a series of different vegetations. At its base is a dense, tropical forest. Above this is a belt of temperate forest, while still higher up, the trees become dwarfed, and there are many shrubs and bushes. In the high valleys there are meadows of rich grass. Between the grassy meadows and the level of perpetual snow is a belt of mosses and lichens, much resembling the tundra of the far north. Above the tundra belt is a true ice-desert. In climbing such a mountain, one passes through a tropical, a temperate, and a cold zone, just as in passing from the equator to the pole. This of course, is due to the fact that the temperature steadily falls as a greater height is reached.


Coral

Ocean Life.—Although the ocean is often spoken of as "a waste of waters," yet it teemed with life long before land animals or plants made their appearance upon our



Courtesy of Professor J. Paul Goode.

The Globe on the Homolosine Projection

The Homolosine Projection is designed to have equal areas on the map correspond accurately to equal areas on the globe. A square inch anywhere on the map represents the same number of square miles of the earth's surface as any other square inch on the map. Because of this the continents are given more accurate form than is shown in Mercator's Projection. *See page 218*. This is particularly noticeable in the Northern Hemisphere, where Northern Canada, Greenland, Northern Europe, and Northern Asia are unduly widened out in Mercator's Projection. In the Homolosine Projection this widening is avoided, and these sections of the globe are represented in their true projection. On the map the British Empire is represented by the shaded parts.

planet. Remains of seaweeds and marine animals, which are known as *fossils*, are found in older rocks than any which contain fossils of land life. To-day the ocean is the home of an incredible number of plants and animals. As a matter of fact, there is a far greater number of them, and a much larger variety, in the sea than upon the land.

Nor must the life upon the ocean be forgotten. Many varieties of birds obtain their food from it and spend the greater part of their lives either flying over it or swimming on its surface. Among the best known are the graceful gull, the awkward penguin, the greatest of all ocean-swimming birds, and the huge albatross, the largest of all sea-birds.

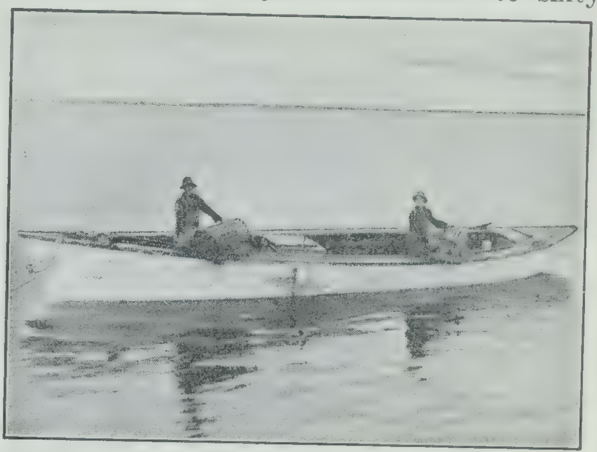
The vegetation of the sea ranges from tiny plants, too small to be seen without the help of a microscope, to huge growths which would measure a quarter of a mile in length if stretched out straight. Sea-weeds grow in all latitudes, even in the polar sea. The larger varieties cling to the rocks in shallow water close to land, or float unattached in quiet areas of deep water. They form marine forests, in which dwell countless millions of sea-animals, such as molluscs, jelly-fishes, sea-worms, and crabs, as well as fish of all sizes which prey upon these animals and upon one another.

Sea-weed serves many useful purposes. Some varieties provide palatable food for man. Others furnish the raw material from which paper can be made. From certain species valuable chemicals, such as iodine, can be extracted. From other varieties the Japanese make a strong glue, with which they stiffen the paper used for making fans and screens. Sea-weed is a good fertilizer, and is much used for this purpose by farmers near the coast.

The animal life which is found in the ocean ranges from microscopic animals of the simplest type to the huge whale, the largest of all living creatures. The sponges, found chiefly in the warm waters of the tropical seas, are really the skeletons of sea-animals of a low type. Stranger still is another creature also found in the warm tropical waters—the coral polyp. It is a very tiny sea-animal, which builds up its minute body with lime extracted from the sea-water. The beautiful coral, so familiar to all, consists of the bodies of millions of coral polyps. The bodies of these polyps form massive foundations of coral in the shallow water close to the coast of a continent, around an island, or upon a submarine volcanic peak. The skeletons of successive generations of polyps heighten the reef of coral until its top rises above the waves. Fragments of shells, pieces of coral, and sand, are piled up by the waves on or behind the reef, so that new land is made. In this manner *coral islands* are formed. Certain plants, particularly the coconut-palm, flourish on these islands. A great many even form suitable homes for men.

The pearl oyster provides us with an even more beautiful substance than coral. These oysters coat the inside of their shells with a bright glittering covering. This substance we call mother-of-pearl. Pearls are composed of the same substance deposited about some irritating object, such as a grain of sand, which has found its way inside the animal's shell.

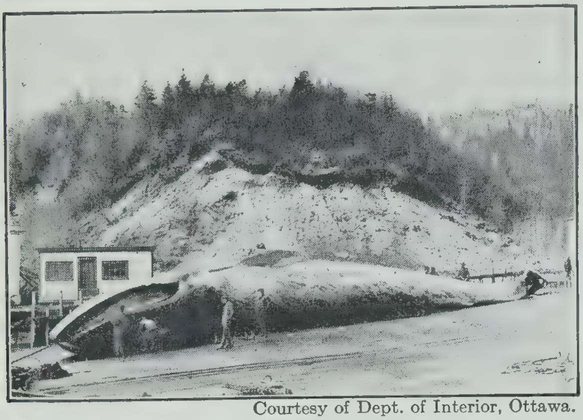
More interesting, perhaps, is the common oyster, so delicious as food. Vast quantities of these are consumed, the people of London, England, alone eating more than a billion each year. Yet the number consumed by man is probably not so great as the number eaten by the many varieties of sea-animals. Fortunately oysters multiply very rapidly. A single oyster lays from sixteen to sixty million eggs in one season. Oysters reach their full growth when they are three or four years old.


Lobster Fishing, New Brunswick

No list of sea-delicacies would be complete unless it included the lobster and his close relatives, the crab, the shrimp, and the prawn. All these belong to a single family with hard, armor-like shells. The lobster is caught with traps baited with meat or dead fish and set on the bottom not far from shore. Each trap is big enough to hold several lobsters. Every few days the traps are hauled up and emptied. The lobsters are kept in floating cages until enough are caught for a shipment to the market. The east coast of *Canada* is famous for its excellent lobsters.

The ocean yields an enormous number of fish. Thousands of millions of pounds are taken annually, and the supply seems inexhaustible. Fish, like oysters, multiply very rapidly. A single codfish lays annually 3,000,000 eggs or more. Amongst the commonest of the food-fishes are the cod, the mackerel, the salmon, the herring, the halibut, the haddock, and the sardine. This list names only a very small number of the varieties of sea-fish which are caught for food. Southern *China*, for instance, has so many varieties that the Chinaman may have a different kind of fish for breakfast every day in the year.

The seal, the walrus, and the whale are also valuable. The seal is caught mainly for its beautiful fur, while the hide of the walrus makes magnificent leather, and its large tusks are valuable as ivory. Whaling used to be one of the most important of marine industries. The oil obtained from the fat of the whale was very valuable, and the whalebone brought a good price. Lately, however, the increasing use of mineral oil and of metal substitutes for whalebone has made whaling much less profitable, and comparatively few ships are now used for this purpose.



Courtesy of Dept. of Interior, Ottawa.

Preparing to cut up a Whale on the Pacific Coast

The harvest of the sea now ranks second only to the harvest of the land, and the reaping of the sea-harvest gives occupation to hundreds of thousands of men all over the world.

Helps.—How do we know that the earth is spherical? Make a drawing of a ship sailing on the ocean, showing the effect of the curved surface of the earth upon what you can see from where you stand upon the shore. Which diameter of the earth is longer, the north-and-south, or the east-and-west? What is the circumference of the earth in miles? What proportion of the earth's surface is water? Name the continents and oceans. What continents are washed by the Arctic Ocean? by the Atlantic Ocean? by the Pacific Ocean? by the Indian Ocean? by the Antarctic Ocean? How are the Arctic and Pacific Oceans connected?

If you face towards the south pole, is the east to your right or to your left? Do you live in the Northern or Southern Hemisphere? in the Eastern or Western Hemisphere? Why is the Northern Hemisphere called the *Land Hemisphere?* Explain the term *parallel of latitude.* Tell in what direction run all lines joining the two poles. Locate on the school globe the prime meridian.

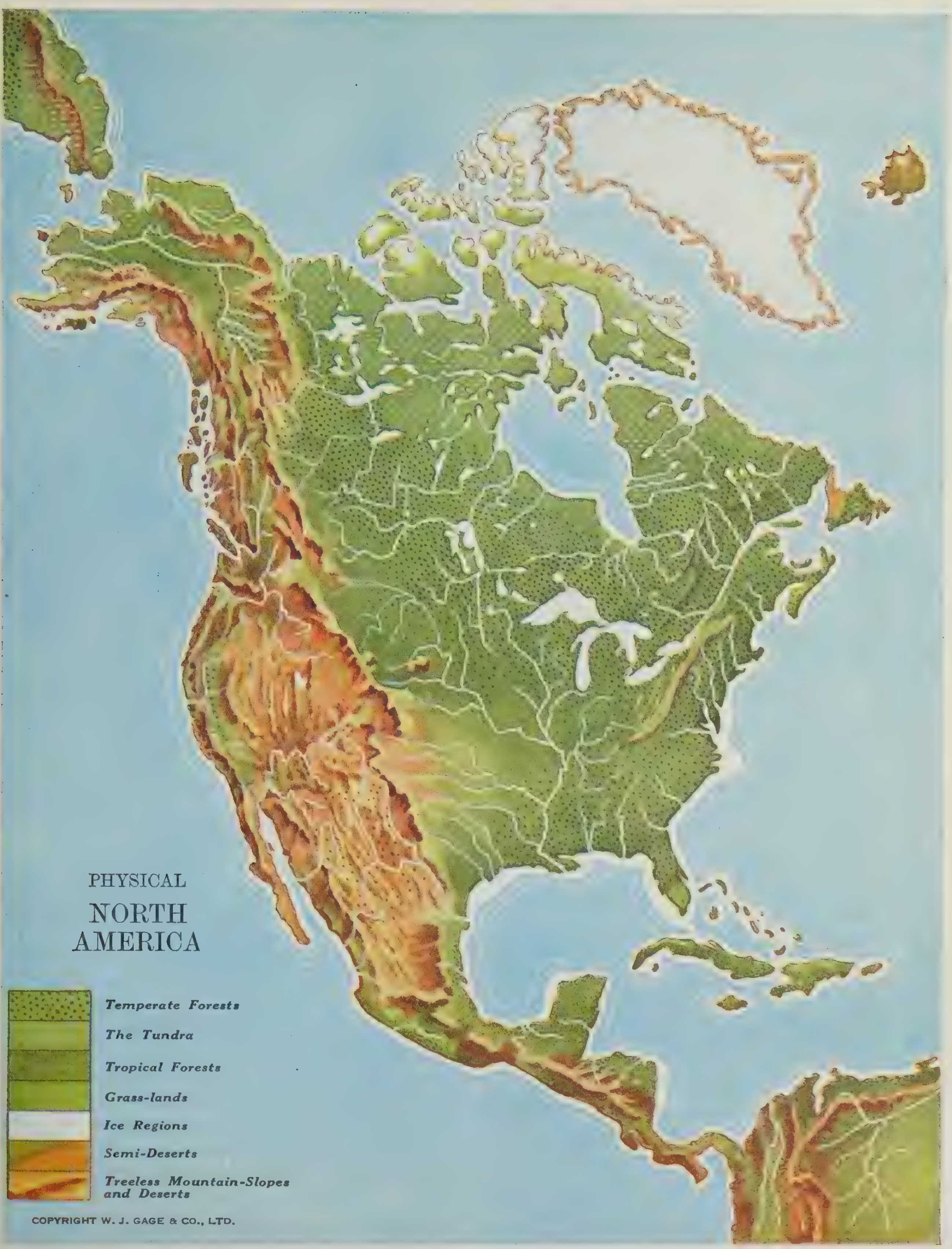
Refer to the map of North America, page 25. What is the approximate latitude and longitude of (*a*) Hamilton? (*b*) Winnipeg? (*c*) Philadelphia? (*d*) Edmonton? Refer to the map of Asia, page 180. What is the approximate latitude and longitude of (*a*) Peking? (*b*) Lhassa? (*c*) Singapore? (*d*) Calcutta? How far is Leningrad north of Alexandria? Express your answer (*a*) in degrees; (*b*) in miles. Refer to the map of Africa, page 199. What is the approximate latitude and longitude of (*a*) Cairo? (*b*) Lake Tanganyika? (*c*) Cape Town? The Grand Banks of Newfoundland extend from 43° to 48° north latitude and from 48° to 55° west longitude. Explain the meaning of this statement. The Arctic Circle is the parallel of 66½° north latitude. Approximately how many miles is it north (*a*) of the equator? (*b*) of the Tropic of Cancer? (*c*) of Calgary? (*d*) of Edmonton?

What are the special features of each of the zones? Account for the fact that the most progressive peoples of the world live in the North Temperate Zone. In which zone do you live? From your knowledge of your own locality, list (*a*) the chief food-crops; (*b*) the most important domestic animals of this zone. Are any food-crops grown in the North Frigid Zone? What food do the Eskimos find in the far north? In which of the great vegetation areas of the world is your home? In which direction from your home is the tundra? the northern forest? the tropical jungle?

With how many sea-birds are you familiar? Do any of these birds ever travel inland? Name them. What various uses can be made of sea-weed? Tell all you can about sponges. Name as many coral islands as you can. What articles have you seen that are made of mother-of-pearl? Write a brief account of the oyster and the lobster. What book have you read that deals with whaling?

THE CONTINENT OF NORTH AMERICA

Map Questions.—What ocean is east of North America? west of it? north of it? What large bay is on the north coast? Name two big gulfs on the east coast and one on the west. What strait separates North America from Asia? What is the largest island north of the continent? Name the bay and the strait south-west of this island. What peninsula lies between *Hudson Bay* and the *Gulf of St. Lawrence?* Name the island which partly encloses the gulf. What two peninsulas partly enclose the *Gulf of Mexico*? Where



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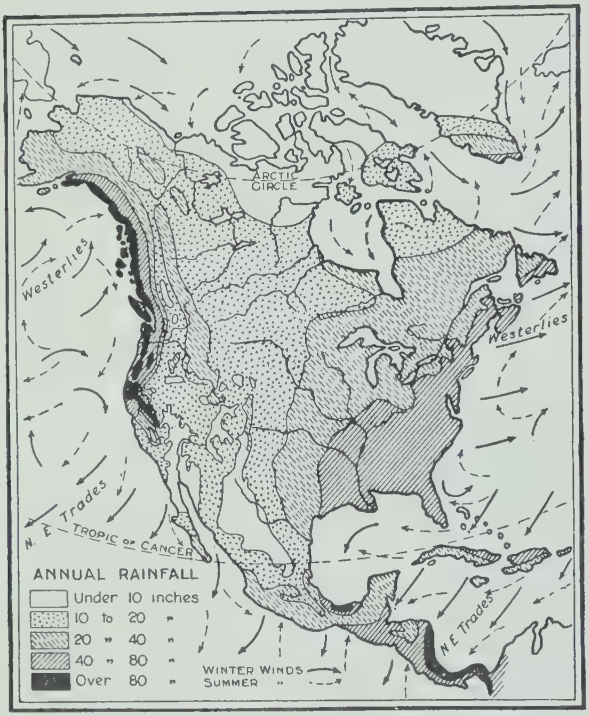
are the *West Indies?* Name the four largest islands of this group. What sea lies south of them? What separates the *Caribbean Sea* from the Pacific Ocean? What is the narrowest part of North America? What two continents are joined by this narrow isthmus? What peninsula partly encloses the *Gulf of California?* Is the southern or northern part of the west coast of North America more broken? Where are the best harbors on the west coast?

What are the two largest countries of North America? Which of these is the larger? What country lies south of the *United States?* What river flows between the United States and *Mexico?* How many countries are there in *Central America?* Name them. Where is *Alaska?* To what country does it belong? Name a large river which crosses Alaska. Into what sea does it empty? In what zone or zones is *Greenland* situated? Alaska? Canada? The United States? Mexico? The West Indies? Central America? Give the boundaries of each of these countries. In what zone is the greater part of the continent? Why is this an advantage?



Rainfall and Wind Map of North America

Position and Extent.—North America, as its name implies, is the northern portion of the great land mass which forms the New World. On the east, the Atlantic Ocean separates it from Europe; on the west, the Pacific Ocean lies between it and Asia; the northern coast is washed by the icy waters of the Arctic Ocean. The *Isthmus of Panama* forms a narrow land-bridge connecting North and South America. North America approaches Asia and Europe most closely in the north, where the narrow Bering Strait separates it from Asia, and where Greenland, Iceland, and the *Faroe Islands* break the ocean gap between it and Europe.

The continent is roughly triangular in shape, being broad in the north and tapering towards the south. From north to south it extends a distance of about 5,000 miles. Its greatest breadth from east to west is considerably over 3,000 miles. Its area is over 8,000,000 square miles—more than double the size of Europe. It ranks third of all the continents in size; Asia and Africa are larger.

The map shows that North America is almost entirely a temperate region. The northern coast lies just within the Arctic Circle, and only a very small part of the continent is within the tropics. The whole of the *United States* and almost the whole of Canada are in the Temperate Zone.

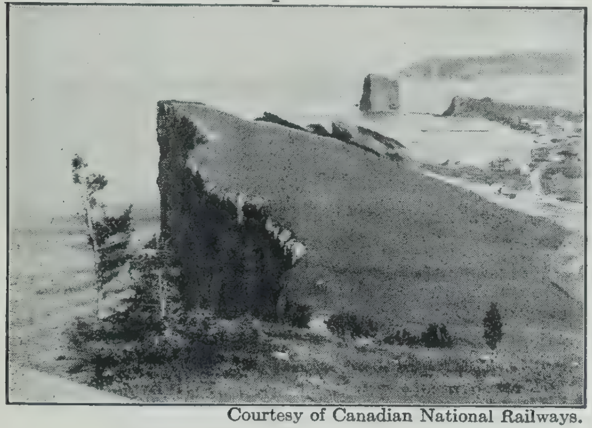
The North Coast.—The north coast of the continent is washed by the Arctic Ocean, and so is almost valueless for commerce. A network of islands extends from the coast to within 500 miles of the pole itself. With the exception of Greenland, which belongs to Denmark, these islands are a part of the Dominion of Canada. Only a few Eskimos live there.

Hudson Bay, a large, shallow extension of the Atlantic Ocean, with which it is connected by *Hudson Strait,* is the largest and most important indentation of the northern coast. It is icebound for six or seven months of the year, and so far has been little used for shipping. There is a sea-route from the Atlantic to the Pacific north of the continent, but its difficulties and dangers are so great that it can never become a commercial highway.

The East Coast.—The northern portion of the east coast is rough and rocky. It contains many good harbors, ranging in size from small bays, just large enough to shelter a few fishing vessels, to magnificent ports such as those of *Halifax* and *New York.* The *Gulf of St. Lawrence* is the largest opening in the coast-line in this part of the continent.

Between Hudson Bay, the Atlantic Ocean, and the Gulf of St. Lawrence is the broad peninsula of *Labrador*.

In the south the shore of the east coast is low and sandy, and good harbors are scarce. The *Gulf of Mexico* is the most striking feature of the southern portion of the coast-line. Note the two large peninsulas which partially enclose it—*Florida*, which separates it from the Atlantic, and *Yucatan*, which cuts it off from the *Caribbean Sea*. The *West Indies* separate this sea from the Atlantic.



Courtesy of Canadian National Railways.

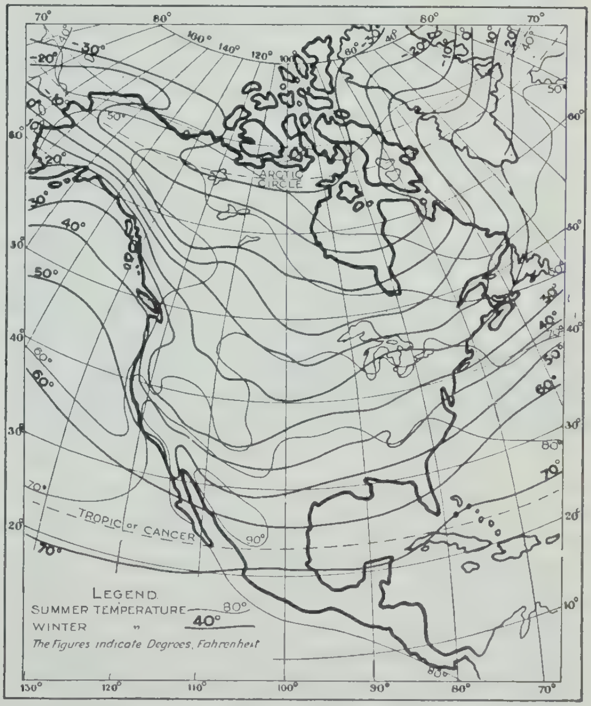
Percé Village, Gaspé Coast, Quebec

All the continents are surrounded by shallow areas of water which extend for varying distances from the coast. The floor of this shallow area, over which the water is not more than 600 feet deep, is called the *continental shelf*. Upon the eastern side of North America the continental shelf is very wide. On this shallow submarine platform there is much plant and animal life. The *Grand Banks of Newfoundland* form a part of the continental shelf. This is the richest cod-fishing area in the world.

There are two important currents in the Atlantic along the eastern coast—the *Gulf Stream* and the *Labrador Current*. The Gulf Stream is a current of warm water flowing northward from *Florida Strait* parallel to the coast. It has little effect upon the climate of North America. To it, however, the *Bermuda Islands* owe their existence. These are the most northerly coral islands in the world. They lie in the midst of the Gulf Stream and in its warm waters the coral insects are able to live and thrive much farther north than they are found elsewhere.

The Labrador Current is a cold current flowing southward from the Arctic Ocean. It sweeps down from *Baffin Bay* through *Davis Strait* into the Atlantic, where it is joined by a similar cold current which flows along the coast of Greenland. It meets the Gulf Stream near Newfoundland, and the mingling of the cold and warm waters of the two currents causes the heavy fogs which are so common there. It continues southward along the coast of the United States to *Cape Hatteras*, where it apparently sinks beneath the warmer water around it.

The Labrador Current carries down with it many icebergs. These are huge masses of ice broken from the ends of the great glaciers which fill the valleys of Greenland. Icebergs and fogs are both dangerous to vessels. To the Labrador Current, however, is due, to a great extent, the immense number of fish which throng the Newfoundland Banks. It brings down with it from the Arctic Ocean incredible quantities of small, jelly-like plants called *plankton*, upon which many varieties of small fish feed. These fish, in their turn, provide food for the cod, so the codfish upon

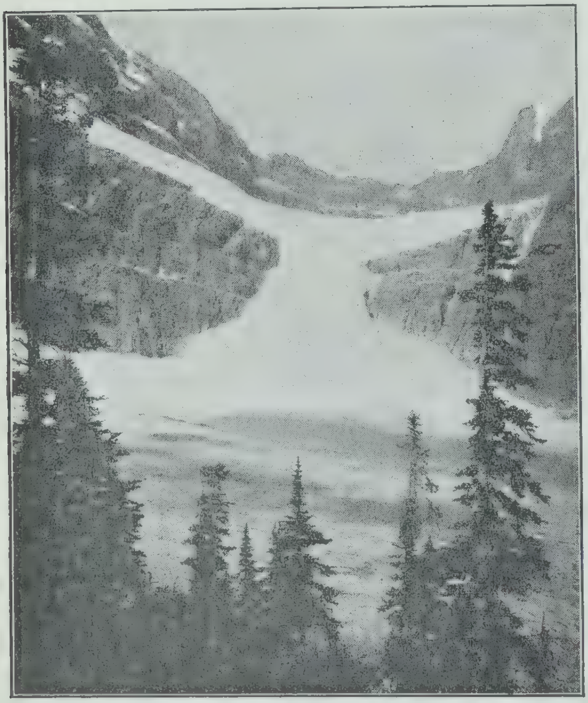


Temperature Map of North America

the Newfoundland Banks could not exist without the tiny plankton which the Labrador Current supplies in such abundance.

The West Coast.—The west coast, like the east coast, is very irregular in the northern section. From *Cape Flattery* northward, there are numberless sounds and inlets, many of them forming fine harbors, as at *Prince Rupert* and *Vancouver*. A chain of islands fringes the whole of this part of the coast. Of these *Vancouver Island*, with its beautiful harbor of *Victoria*, is the largest and most important.

From Cape Flattery southward the coast is high, steep, and almost unbroken. The only good harbor is that formed by *San Francisco Bay*. The *Gulf of California*, a long, shallow body of water lying between the peninsula of *Lower California* and the mainland, is the most striking feature. Although large, it is of little use, as the chief ports of *Mexico* are upon the coast of the Gulf of Mexico.


The Ghost Glacier of Mount Edith Cavell, Alberta

Structure.—North America consists mainly of three highland areas and a vast plain lying between them. The *Western Plateau* or *Cordillera* is an extremely high and broad plateau which parallels the west coast throughout its whole extent. The *Appalachian Highland* runs parallel to the east coast from the Gulf of St. Lawrence to the Gulf of Mexico. The third highland is the V-shaped *Laurentian Plateau*, which encloses Hudson Bay and includes the whole north-eastern section of the continent. The *Great Central Plain* extends from the Cordillera on the west to the Appalachian Highland and the Laurentian Plateau on the east, and from the Gulf of Mexico on the south to the Arctic Ocean on the north. In addition to these main divisions, there is also a large coastal plain which lies between the Appalachian Highland and the Atlantic Ocean, and which extends also around the Gulf of Mexico. This plain is called the *Atlantic and Gulf Coastal Plain*.

Effects of Glaciation.—Long, long ago the climate of North America was much colder than it now is. It was so cold that snow and ice gathered in huge sheets thousands of feet thick, forming three enormous glaciers in Northern Canada. One covered the middle of Labrador Peninsula, another was west of Hudson Bay in the present *District of Keewatin*, while the third accumulated along the Cordillera. As these sheets grew in thickness, the weight of the thick mass of ice and snow became so great that the lower layers were squeezed out, and so huge ice fields spread out from the original glaciers and moved slowly over the land.

As the ice crept slowly forward, it altered the ground beneath in many ways. Great masses of rock were ground into soil; the tops of hills were worn down and rounded; the surface soil was carried along with the ice, and so was gradually transported from the central glaciers to the edges of the ice sheets.

These ice sheets crept southward until they covered almost all of Canada and a part of the United States. Then the climate became warmer again, and the ice sheets gradually melted. They had entirely altered the surface of the land. The Laurentian Plateau had been almost completely stripped of its soil, which had been carried south and west and deposited on the plains of Southern Canada and the Northern United States.

The masses of clay and rock deposited by the glaciers had dammed many of the river valleys, so that lakes were formed. In other places huge hollows had been left in the soft rock, and the water from the melting ice filled these and also formed lakes. The surface of the glaciated area was left so uneven that the rivers crossing it have very irregular courses and are broken by many rapids and falls.

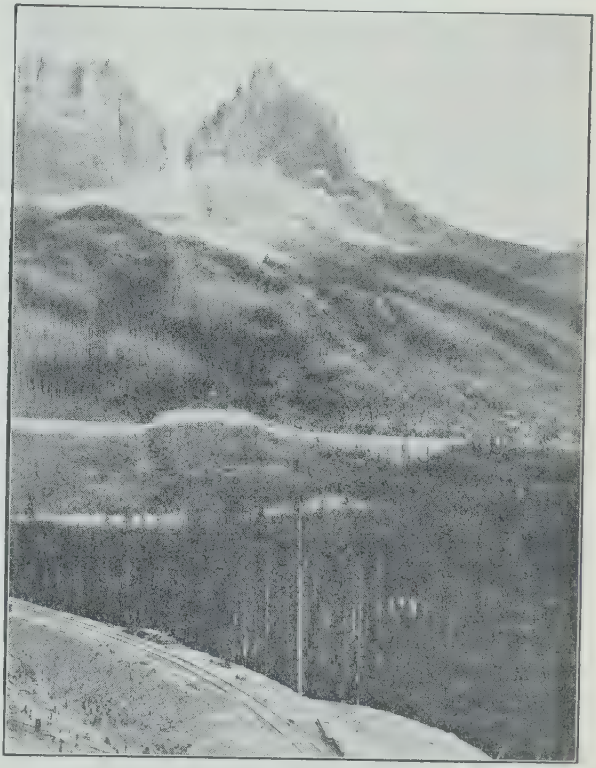
The Western Cordillera.—The Western Plateau or Cordillera begins in *Alaska* and stretches southward throughout the whole length of North America. It is comparatively narrow in the far north, but broadens rapidly towards the south. It is widest at 40° N. latitude, where it stretches across one-third of the width of the continent. The whole of Mexico and Central America is within this highland, with the exception of a narrow belt of low land bordering the coasts.

From this great plateau rise many mountain ranges. The *Rocky Mountains* mark the eastern edge of the highland in Canada and the United States. This tremendous range extends with scarcely a break from Alaska to Mexico. The western side of the Cordillera is marked by a series of ranges rising close to the margin of the Pacific Ocean.

The great Western Plateau is naturally divided into a series of smaller plateaus. In the far south lies the high *Plateau of Mexico*, enclosed by the eastern and western *Sierra Madre* ranges. A part of this plateau is drained by the *Rio Grande*, which forms part of the boundary between Mexico and the United States. Over much of its area, however, the creeks and streams flow into depressions in the ground which have no outlet to the sea. Such a region is called an *area of interior drainage*. The water in the lakes and pools of such an area is always salt.

To the north of the *Plateau of Mexico* is the *Colorado Plateau*. It is drained by the *Colorado River*, which empties into the Gulf of California. The Colorado River has cut a narrow valley with almost vertical sides, called a *canyon*, across this plateau. The *Grand Canyon* of the Colorado is over a mile deep at certain places. Huge rocks of almost every imaginable color—black, white, green, red, brown—and of the most fantastic shapes stand along the jagged rim of the canyon. Far below, the river, red with mud, swirls foaming between the rock walls of its prison.

North of the Colorado Plateau the Cordillera widens out to its greatest breadth. In this part of the highland there are three parallel ranges between the Rocky Mountains and the Pacific Coast—the *Wasatch Mountains*, the *Sierra Nevada*, and the low *Coast Range*.



Cathedral Mountain, Field, British Columbia

Between the Wasatch Mountains and the Sierra Nevada is an immense depression, known as the *Great Basin*. It resembles an enormous, shallow bowl, the rim of which is formed by the high ground surrounding it. This is an area of interior drainage and contains several salt lakes. Of these the largest is *Great Salt Lake*, situated close to the eastern edge of the Great Basin.

The *Californian Valley* lies between the Sierra Nevada and the Coast Range. It is filled with very fertile soil brought down by the *Sacramento* and *San Joaquin Rivers* from the neighboring mountains. These rivers unite and pour their waters through a gap in the Coast Range into San Francisco Bay.

North of the Great Basin the *Columbia Plateau* lies between the Rockies and the *Cascade Mountains.* Through it flow the *Snake* and *Columbia Rivers.* These streams also have cut canyons on a very grand scale.

The portion of the Cordillera lying in Canada consists of a belt of mountainous country from 400 to 500 miles wide. The Coast Range rises from the margin of the ocean and extends inland for a hundred miles. To the east of the Coast Range is the *Interior Plateau,* a region about 100 miles broad and 500 miles long. To the east of this plateau are the *Selkirk* and the Rocky Mountains. The principal river in this mountain region is the *Fraser*, which, after a long and turbulent course, enters the *Gulf of Georgia* at the city of *New Westminster.*

Ploughing with Tractors on the Great Central Plain

In the extreme north the Rocky Mountains gradually decrease in height until they cease entirely as they approach the Arctic Ocean. The coast ranges of Alaska, called the *Alaska Mountains*, contain many high peaks. The *Yukon River*, which rises in Canada and flows westward through Alaska to Bering Sea, is the chief river of the Alaskan area of the highland.

The prevailing wind over the northern half of the Cordillera is from the west. North of 45° the west coast has rain at all seasons, brought by the moist west winds which sweep over the North Pacific. These west winds moderate the climate of the northern portion of the west coast of America, making it milder in winter and cooler in summer than that of the regions lying inland. During the winter they bring rain to the coast as far south as 23° N. latitude. The mountain-girt plateaus and basins have a very scanty rainfall, particularly in the south.

The vegetation of the Cordillera varies with latitude, rainfall, and altitude. That part of the coast to which the west winds bring heavy rainfall is densely forested with cone-bearing trees, some species of which, such as the Douglas fir, attain a tremendous size. Many of the higher peaks of the mountains are above the tree-line, and on them the forests rise towards grass-lands gay with flowers, which in turn merge into areas of bare rock and snow fields. The arid plateaus and basins have a semi-desert vegetation of scrub. The most characteristic plant is the sage-brush, while towards the south the thorny cactus and the gnarled yucca are common. The west coast of Mexico is too dry to support a tropical forest, and savanna-lands of mixed grass and woodland are found there.

There are many wild animals among the wooded mountains. The Rocky Mountain sheep, the Rocky Mountain goat, and the grizzly bear are the most characteristic. On the dry plateaus there are burrowing animals, such as the prairie dog. There, too, the rattlesnake is very common. Scorpions are very numerous in the desert regions.

The Great Central Plain.—The Great Central Plain is divided by a slight elevation of land running from east to west close to the boundary between Canada and the United States. The southern portion slopes towards the Gulf of Mexico; the northern towards Hudson Bay and the Arctic Ocean. This may be shown by tracing the courses of the *Mississippi*, the *Saskatchewan*, the *Red*, the *Nelson*, and the *Mackenzie Rivers*.

The Central Plain of the continent, for the most part, is cold in winter and hot in summer. The winter temperature of the northern districts is very low, and the summers, though warm, are short. In the south, both summer and winter are naturally much warmer. The rainfall occurs chiefly during the summer, when it is of greatest use for plant growth. The southern portion of the Plain has the heaviest rainfall, for there the summer winds blow inland from the Gulf of Mexico and bring abundant moisture.

Courtesy of Canadian National Railways.

Buffaloes at Wainwright Park, Alberta

The Great Plain of North America is one of the most fertile areas in the world. In the south, cotton and sugar-cane are grown. Then comes a great belt of land in which Indian corn is the main crop. Farther north are broad stretches of wheat-land, which extend northward into Canada as far as the *Peace River*.

Most of the Great Plain is a natural grassland, wooded only along the courses of the rivers. North of the Saskatchewan River, however, the Plain is thickly wooded. This forest is part of the northern forest which covers the northern part of the continent right from Alaska to the Gulf of St. Lawrence.

Towards the west, the ground rises in rolling plains towards the foothills of the Rockies. The plains lying right in the lee of the mountains are too dry, except in the northern part, to permit ordinary farming. Much of this part of the Plain is used for grazing great herds of cattle, and even the driest districts produce enough grass to support many large flocks of sheep.

The prairies were once the home of enormous herds of bison. As late as 1858, a traveller upon the western plains drove for ten days through a single continuous herd, and the prairie was black with moving animals as far as the eye could reach. These animals were so wantonly slaughtered during the latter part of the nineteenth century that they are now almost extinct as wild animals. Another animal of the plains, the beautiful prong-horned antelope, still survives, but in sadly decreased numbers. The coyote or prairie wolf, the most cunning of all wolves, has more than held his own, and his sharp bark and mournful howl are to be heard almost anywhere on the western plains and in the foothills of the mountains.

The Indians of the plains were among the most picturesque and savage tribes of the continent. In the south and central regions the *Apaches*, the *Navajos*, and the *Sioux*, the wild horsemen of the plains, and, farther north, the *Crees*, hunted and fought over the high plains and the prairies. Now the descendants of these fierce warriors live peacefully upon their reservations.

An Indian Chief and his Family

The dress in the picture is now used for ceremonies only.

East of the Mississippi the ground is very level for many miles, until it rises in gently rolling slopes into the Appalachian Highland. The soil of this part of the Plain is very fertile, and some of the most productive farms in the world are found there.

The Appalachian Highland.—The Appalachian Highland is much less extensive than the Western Cordillera. It is only about 200 miles wide, and consists of comparatively low, rounded hills, which are usually wooded. Both sides of the Highland are well watered, for the greater part of the rainfall comes from storms which travel from the Gulf of Mexico to the north-east in a path parallel to the mountains.

In the north are several distinct ranges of low mountains. The most important are the *Adirondack* and *Catskill Mountains* in the state of *New York*. There is only one good route from the Atlantic Coast to the *Great Lakes* through these confused and tangled hills. This is afforded by the valleys of the *Hudson River*, and of its tributary, the *Mohawk*. The Hudson-Mohawk Valley early became the main highway of travel through the Appalachian Highland, and still retains its supremacy. The city of New York, the largest and wealthiest of American cities, owes much to its situation at the mouth of the Hudson River.

Photo from Ewing Galloway, N. Y.

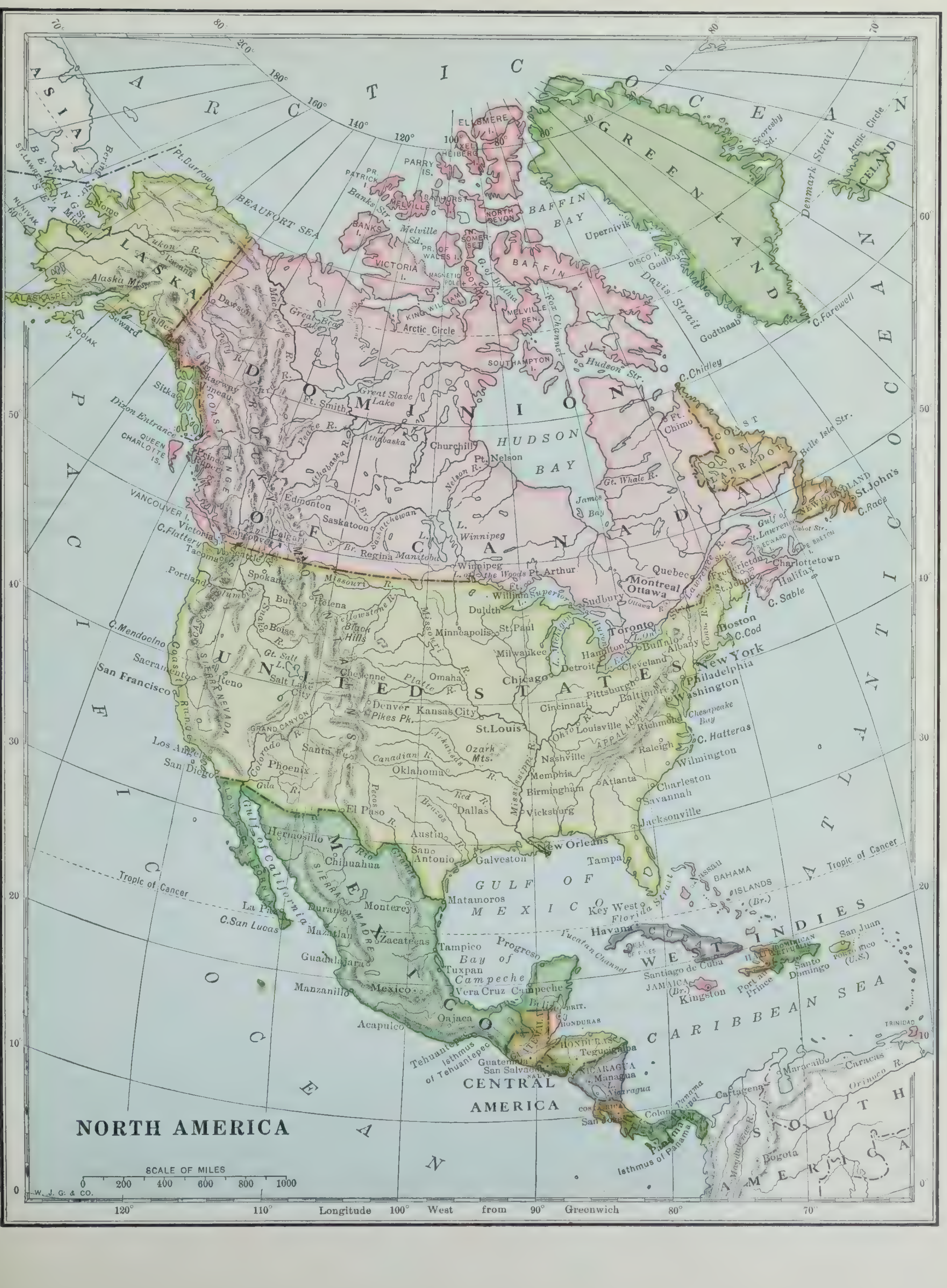
A Model Orange Orchard, near Tampa, Florida

South of the Hudson River the Appalachian Highland consists of a central belt of parallel, even ridges, running in a general south-west to north-east direction. These ridges are flanked upon the east by the *Piedmont Plateau*, and upon the west by the *Appalachian Plateau*. Between the mountain ridges are fertile valleys. Across the ridges eastward-flowing rivers, such as the *Delaware*, *Susquehanna*, *Potomac*, and *James*, have cut narrow valleys, which are important lines of communication within the Highland.

The Piedmont Plateau presents a very steep face to the east, and below this lies a flat, coastal plain extending to the Atlantic. This *escarpment*, as such a steep descent from a plateau is called, marks the limit of navigation from the Atlantic, since the course of the rivers is broken by falls or rapids where they plunge down from the plateau to the plain. At the eastern edge of the plateau, known as the *Fall Line*, are located the chief cities and ports of this region. The rivers provide them with abundant water-power.

The Appalachian Plateau also presents a steep slope towards the east, and this forms the western limit of the long Appalachian valleys. From the top of the escarpment the Plateau gently slopes west and north-west to the prairies and the *Ohio River*. The surface of the Plateau is deeply cut by narrow valleys through which tributaries of the Ohio River cross it. One of the most important of these, the *Cumberland River*, gives its name to the southern portion of the Plateau. In general, the soil of the Plateau is good, and in parts of it, in *Tennessee* and *Kentucky*, grows the famous "blue grass," which is excellent fodder. The Appalachian Plateau is noted for its mineral wealth. It contains the most valuable coal fields in the world. There are also large deposits of iron, vast quantities of petroleum, and much natural gas.

The Atlantic and Gulf Coastal Plain.—The plain lying between the Appalachian Plateau, the Atlantic Ocean, and the Gulf of Mexico is very low and flat. It is quite narrow in the



NORTH AMERICA

north, but broadens towards the south. It is well watered by many streams flowing from the highland. The coast is fringed with sandbanks and islands, behind which are many lagoons and marshes. In the marshland towards the south rice is grown. There are also large sandy tracts, covered with pine forests. There is much good land, especially suited for the production of fruit, vegetables, and cotton.

The weather on the east coast of the continent is more variable than anywhere else in North America. North-easterly winds, which have passed over the cold Labrador Current, are usually accompanied by heavy falls of snow in winter and by cool rains in summer. South-easterly winds, coming from over warmer parts of the Atlantic, bring rain and mild weather. North-westerly winds, blowing over the cold interior, bring clear, cold weather in winter. Their influence reaches the south, and killing frosts are not uncommon even in Southern Florida.

Courtesy of Air Board, Ottawa.

A Forest and Lake Area in Northern Ontario

Such scenes are typical of the Laurentian Plateau.

The Laurentian Plateau.—The Laurentian Plateau is marked upon its western and southern side by the chain of large lakes which border it. Notice *Great Bear Lake*, *Great Slave Lake*, *Lake Athabaska*, *Lake Winnipeg*, *Lake of the Woods*, *Lake Superior*, and *Lake Huron*. To the east it extends right to the Atlantic Ocean. The valley of the St. Lawrence River separates the Appalachian Highland from the Laurentian Plateau.

The Laurentian Plateau is the lowest of the three highland areas. In fact, it is much more like a vast plain than a mountainous district. It was once much higher than it is now. Long ago it was covered with ice, and the rocks were worn down by moving glaciers. During the many, many centuries which have elapsed since the ice melted, the rivers have continued the work of wearing down the rock. Much of the fertile soil of the western plains and of the basin of the Great Lakes and the valley of the St. Lawrence has come from the rocks which once formed part of this old highland area.

The vast extent of this ancient highland is broken by many low, rounded hills. Between the hills are innumerable streams and countless lakes. Forest covers its whole area, except in the far north, where only mosses, lichens, and a few stunted bushes can withstand the severity of the climate. Although there are a few districts in which farming is possible, the chief value of this part of the continent is in its wood, its minerals, and its fur-bearing animals.

Natural Resources.—Let us now sum up a few of the outstanding advantages of North America, which have contributed much to the rapid development of the continent and to its importance in the world.

The mineral wealth of the continent is unrivalled. Coal, iron, copper, nickel, silver, and oil are found in quantities unknown elsewhere. The coal fields of the continent are estimated to be twenty times as large as those of Europe. Iron ore is found in many parts. The Cordillera produces immense quantities of gold, silver, and copper. The Laurentian Plateau is very rich in minerals, and, although its resources are as yet little known, it is already yielding great quantities of nickel, copper, gold, silver, and iron. This region gives promise of being one of the most valuable mineral areas of the globe.

The forest wealth of the continent is very great. The northern forest is providing much splendid timber and a great deal of pulpwood for making paper. The trees of the western coast yield the finest timber to be found anywhere to-day. The southern forests of the Atlantic coast also contain much valuable timber.

No continent has a greater area of well-watered, deep, and fertile soil. The forest areas, except in the far north, become splendid farm-lands when cleared. The plains of the centre of the continent produce great quantities of food-stuffs.

The Mississippi River and the *St. Lawrence River*, with the Great Lakes, form unexcelled waterways into the heart of the continent. Their influence upon the development of trade can scarcely be overestimated. Besides these, there are many other waterways which help to make transportation easy.

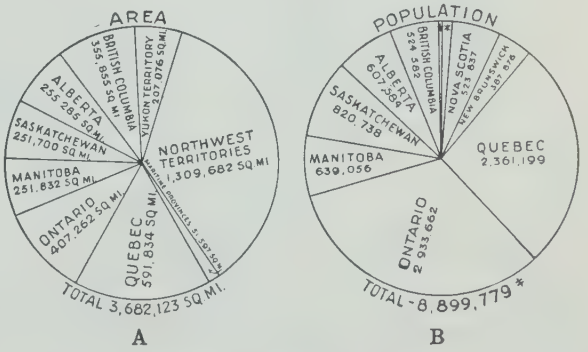
North America is, therefore, possibly the most richly endowed of all the continents. Its people have taken advantage of the wealth which lay to their hands, and, as a result, are the most prosperous, happy, and progressive people to be found anywhere.

Helps—On the map of the world locate North America in relation to the other continents. Compare it with the other continents in area and population. How many highlands are there in North America? Locate them on the map. Which has the highest mountains? Locate the Great Central Plain. Between what highlands does it lie? What great river flows through it to the Gulf of Mexico? What rivers flow northward to the Arctic Ocean? What river flows eastward between these two? Name the lakes which border the Laurentian Highland on the west. What group of lakes lies south of this highland? By what rivers are they drained? What is the name of the plain between the Appalachian Highland and the Atlantic Ocean? Why are the rivers in this plain short? Compare the natural physical divisions of North America as to area and natural resources. Locate the main drainage basins of the continent and locate the principal rivers and lakes in each. Mark on an outline map the watersheds of the continent. Locate the Grand Banks of Newfoundland. Why are they of such importance? State briefly the outstanding advantages of North America. If possible, add to those given in the text, and explain how they have contributed to the prosperity of the people.

THE DOMINION OF CANADA

Position and Area.—The Dominion of Canada comprises the northern portion of North America, with the exception of Greenland, Newfoundland, and Alaska. On the west it extends to the Pacific Ocean and Alaska, on the north to the Arctic Ocean, on the east to Davis Strait, the Coast of Labrador, the Gulf of St. Lawrence, and the Atlantic Ocean. On the south a long, irregular boundary separates it from the United States.

This enormous block of land contains 3,682,123 square miles. This means that Canada is one of the largest countries of the world, only two larger—*Russia*, including her territory in Asia, and China. The continent of Australasia is considerably smaller than Canada, and Europe is only a little larger. Canadian territory forms almost one-third of the total of the British Empire. The width of Canada from the Atlantic to the Pacific is greater than the distance across the Atlantic Ocean between Canada and *Britain*. A steamer can cross the Atlantic in almost as short a time as a fast express train can cross Canada. A traveller who journeys from Halifax to Vancouver covers more than 3,300 miles, and, in crossing Canada, goes almost one-fifth of the whole distance around the earth in our latitude.



Area and Population of Canada

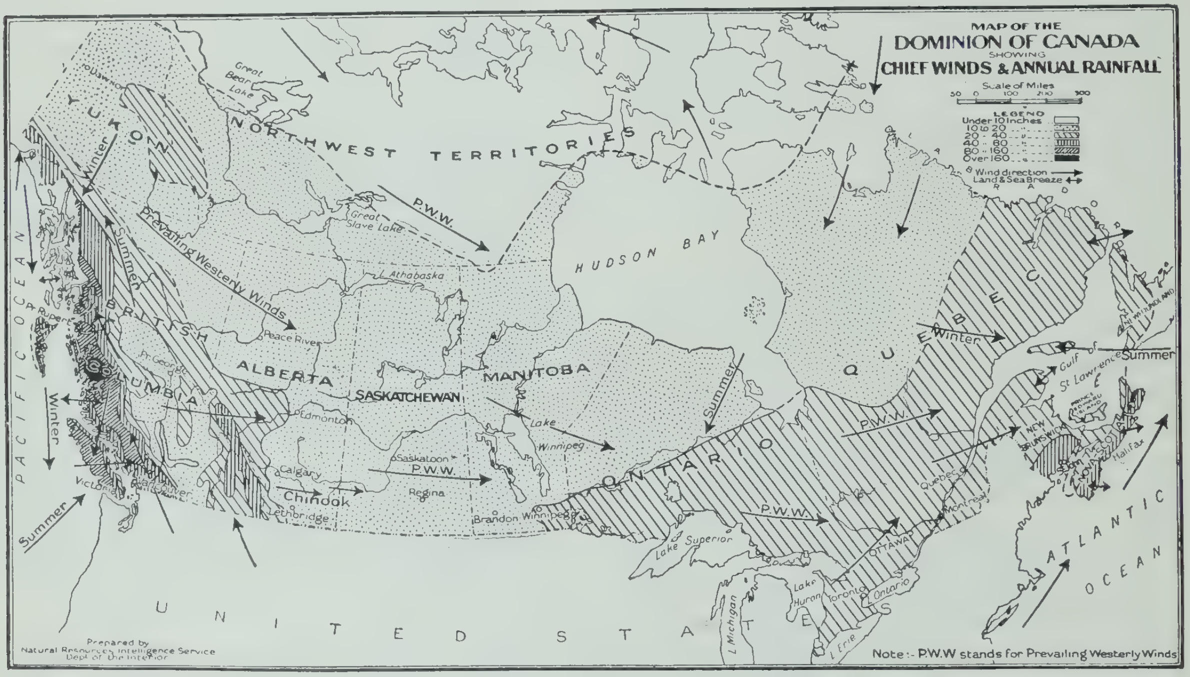
A. Area. *New Brunswick, 27,985 sq. mi.; Nova Scotia, 21, 428 sq. mi.; Prince Edward Island, 2,184 sq. mi. **B. Population.** The figures for the Prairie Provinces are based on the Census of 1926. *Prince Edward Island, 88,615. †Yukon Territory, 4,157, and Northwest Territories, 7,988. ‡Total includes 485 members of Navy.

Divisions for Government. — Although Canada has a central government for the whole Dominion at *Ottawa*, yet the country is so large that it is impossible for a single central authority to look after all parts of it properly. Therefore, Southern Canada is divided into smaller areas called *provinces*, each with a government of its own, which manages the affairs of its own territory. In the east are the provinces of *Nova Scotia, New Brunswick,* and *Prince Edward Island.* These three are known as the *Maritime Provinces,* since they are closest to the Atlantic Ocean. *Quebec* and *Ontario,* lying along the St. Lawrence River and the Great Lakes, are frequently called the *Central Provinces.* Since *Manitoba, Saskatchewan,* and *Alberta* are mainly in the Great Central Plain of North America, they are called the *Prairie Provinces.* West of Alberta, and lying almost wholly in the Cordilleran region, is *British Columbia,* often referred to as the *Pacific Province,* from its position on the Pacific sea-board.

Northern Canada is divided into two territories, which are under the control of the central government at Ottawa. The *Yukon Territory* is named from the great river which flows through it. The vast area called the *Northwest Territories* is made up of three districts—*Mackenzie* and Keewatin on the mainland, and *Franklin,* consisting of *Melville Peninsula* and the islands in the Arctic Ocean.

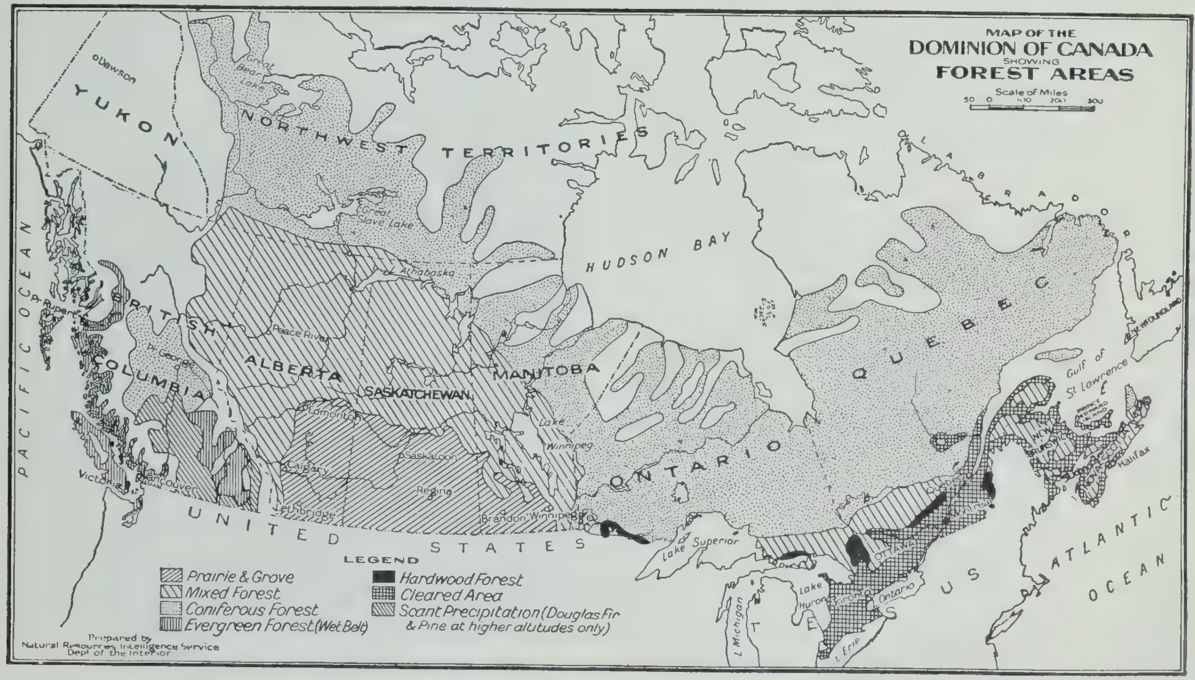
People.—The population of Canada is small in comparison with the extent of her territory. About 9,000,000 people live in the Dominion, and nearly all of them have their homes in a narrow belt of land extending from coast to coast along the southern frontier. If the people of Canada were scattered evenly all over the Dominion, there would be fewer than three persons to each square mile, Compared with England, where the people average nearly 700 to each square mile, Canada is yet far away from being densely populated.

Of course, the climate of the far northern areas of Canada is so cold that the land there cannot support many people. But there is an area of at least 1,800,000 square miles in Southern Canada which is capable of maintaining a large population. At present, Canada is using only a small part of her arable land. As the number of her inhabitants increases, there will come a development of land, as yet untilled, which will place her in the very forefront of agricultural nations. Yet even now a splendid beginning has been made. Already Canada has become the richest and most prosperous of the British over-seas Dominions; already she has become a granary for the crowded cities of the



Motherland; already she ranks as one of the most important food-producing countries of the world.

The people of Canada are mainly either of British or of French descent. When Britain wrested the Lowlands of the St. Lawrence from *France,* the population of that district was almost wholly French. Since that time the descendants of the French settlers have so increased in number that they are now one-quarter of the total population. Most of the French-speaking people live in the province of Quebec, but there are some large settlements of them in the Maritime Provinces, Ontario, and the Prairie Provinces. After the conquest of Canada, a stream of British immigration set in, and has kept up ever since. Accordingly, the remaining three-quarters of the population is largely of English, Scottish, or Irish descent. There are, however, a considerable number of immigrants from other European nations, mainly in the Prairie Provinces, and, in recent years, many citizens of the United States have crossed the border to try their fortunes in the Dominion. There are many Chinese and Japanese in British Columbia, and a few scattered elsewhere in the Dominion. The Indians, who once roamed over the whole land, now number only about 100,000. In the far north a few Eskimos live on the Arctic coast and islands.



Forests.–When Canada first became known to white men, one dense forest extended from the Atlantic Ocean as far west as Lake Winnipeg. Now the settled parts of the country have been largely stripped of forest growth, but the great northern forest still exists, as do the great timbered regions of British Columbia. Then as now, the prairies were but slightly wooded. Sufficient of the original forest still remains to rank Canada as one of the great timber regions of the world. The forest wealth of the Dominion will be considered in connection with the great physical divisions into which it naturally falls.

Animal Life.—The forests of Canada are the home of wild animals of many kinds. The moose is common in every part of the northern forest; the woodland caribou is found from New Brunswick to British Columbia; the Virginia deer is hunted in the more southern forests of New Brunswick, Quebec, and Ontario. Among the carnivora, the cougar is still to be seen occasionally in

Quebec and in the Rocky Mountain Highland. The wild-cat, the Canada lynx, the wolf, and the fox are found throughout the wooded regions. The wolverine, rare in Quebec and Ontario, is still common in British Columbia.

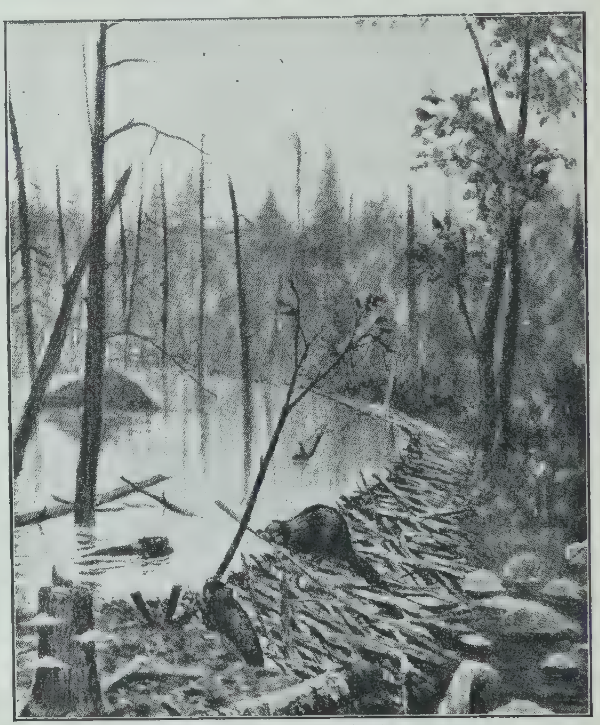
Among the smaller flesh-eaters, the fisher, the marten, the weasel, the ermine, the mink, the skunk, and the otter are found everywhere in Canada as far north as the forests extend. The black bear is the common bear of Canada; the grizzly bear, the most formidable animal of North America, is found only in the Rocky Mountains. Two of the most important fur-bearing animals, the beaver and the musk-rat, are common to all parts of the forests of Canada.

The chief animals peculiar to the prairies are the gopher, a burrowing animal which is a great pest to the farmers of the Prairie Provinces, the prairie fox, and the coyote. The bison, or buffalo, once so plentiful, is now almost extinct as a wild animal. In the Northwest Territories there are a few herds of wood buffaloes, which still run at large in their wild state. In 1925 the Dominion Government turned loose in Northern Alberta about 2,000 buffaloes from the herd maintained at *Wainwright* in Alberta. So far, the animals are thriving in their new home.

The Barren Lands of the far north have also some distinctive animals. Immense herds of Barren Ground caribou live on the coarse grass and moss of the tundra. The musk-ox ranges over the Barren Lands and the islands of the Arctic Archipelago. *See page 11.* There, too, are found the white wolf, the Arctic fox, and the polar hare. The fierce polar bear is another native of the coasts and islands of the Arctic Ocean.

Canada is noted for the immense number and variety of her game birds. The wild ducks and geese breed in the summer time in the far north, and, on their way south in the autumn, they crowd the innumerable lakes of the country. Partridge and prairie chickens, the latter almost entirely confined to the Prairie Provinces, are abundant. Snipe, plover, and many other small game birds are found in great numbers.

National Parks.—In almost all of the provinces large tracts of territory have been withdrawn from settlement and have been set aside as recreation grounds for the people. Among the most important of these are *Rocky Mountain*, *Jasper*, and *Waterton* National Parks in Alberta, the *Algonquin Park* in Ontario, and the *Laurentides Park* in Quebec. In these areas timber is allowed to be cut only under careful supervision, and the animal and bird life is strictly preserved. In addition, other large areas have been set aside as forest and game reserves. Further, many of the battle-fields, famous in Canadian history, such as the *Plains of Abraham* have been dedicated as national parks for the use of the citizens of Canada.

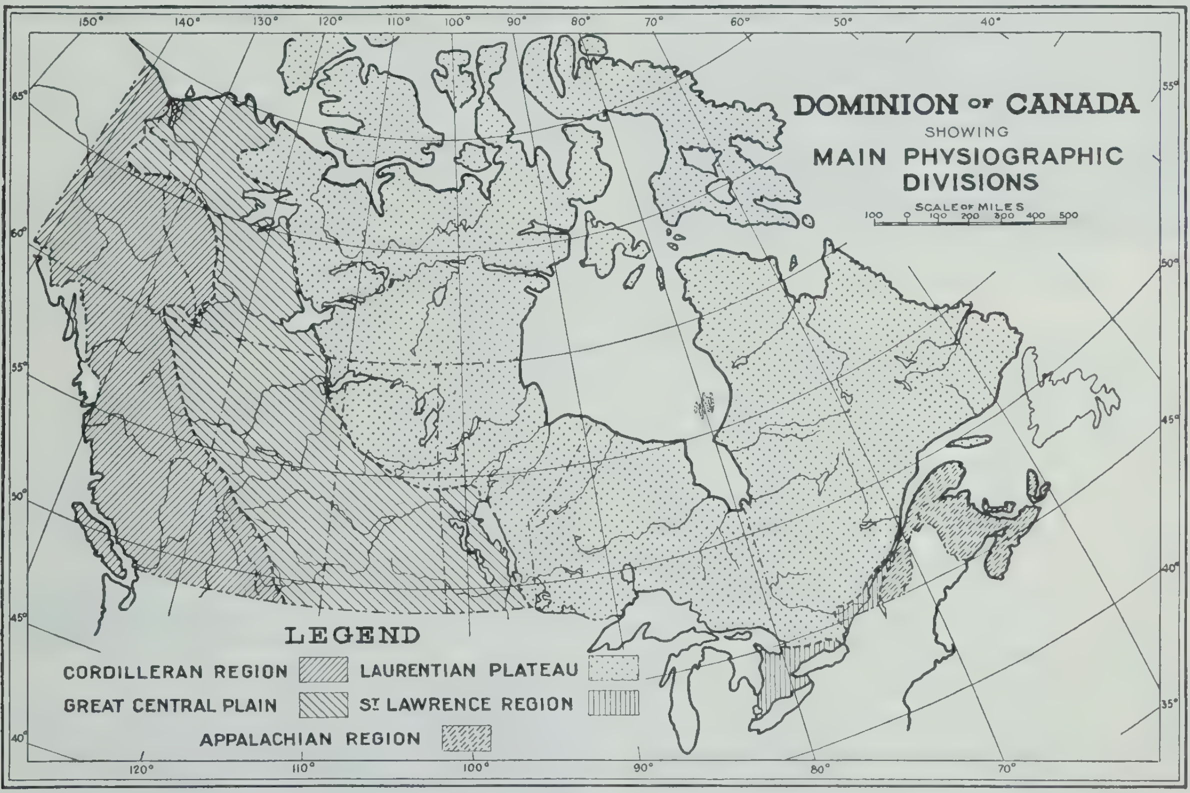


Beavers and their Dam

Helps.—On an outline map mark the boundaries of Canada. Mark the southern boundary from the Atlantic to the Pacific, noting particularly the natural boundaries. Compare Canada with the United States in area. Within what latitudes does Canada lie? Compare it in this respect with the United States. What part of Canada is most suited to settlement? Why is it to the disadvantage of Canada to have so much unoccupied territory? On the map mark the settled portions of Canada from east to west. How many gaps in settlement did you notice? What effect have these gaps on Canada as a whole? Draw an outline map of Canada filling in the provinces and territories. Trace the boundaries of each. Compare the provinces as to area and population. From what countries has the population of Canada been principally drawn? What is the advantage of a mixed population such as ours? Describe briefly the animal life of Canada? What is the value, commercial and otherwise, of the animal life? Describe briefly the Canadian forests; the national parks

THE APPALACHIAN REGION

Canada may be divided into five clearly marked natural physical divisions, each having its own special features. These are the *Appalachian Region*, the *Lowlands of the St. Lawrence*, the *Laurentian Plateau*, the *Great Central Plain*, and the *Cordilleran Region*.



Extent and Surface.—The Appalachian Region includes the Maritime Provinces and the south-eastern corner of the province of Quebec. This region is the northern extremity of the Appalachian Highland. It is bounded upon the west by a continuation of the *Green Mountains* of *Vermont* and the *White Mountains* of *New Hampshire*. These Appalachian ranges cross the south-eastern part of Quebec, then follow the shore of the St. Lawrence to the end of *Gaspé Peninsula*. The hills of these ranges are comparatively low in the *Eastern Townships* of Quebec, and the country which they traverse is beautiful rolling land, well suited for general farming. Along the St. Lawrence shore, however, where they are known as the *Notre Dame Mountains*, they are much higher and steeper. In the Gaspé Peninsula they rise to elevations of 3,000 feet and more. There they are called the *Shickshock Mountains*. The whole of Gaspé Peninsula is a rocky, rough, mountainous plateau, with an average elevation of about 1,500 feet above sea-level.

To the east and south of these Appalachian ranges lies the broad, well-watered lowland which forms the provinces of New Brunswick, Nova Scotia, and Prince Edward Island. This plain in New Brunswick is crossed by two ranges of low hills. In Nova Scotia a slightly higher range runs throughout the whole length of the province. These three ranges are also part of the Appalachian mountain system. Prince Edward Island, however, is an almost level tract of gently rolling land, and covered with deep, rich soil of great fertility.

Coast-Line.—The Appalachian Region fronts upon the St. Lawrence River, the Gulf of St. Lawrence, and the Atlantic Ocean. The coast along this part of the St. Lawrence is steep and forbidding. The chief inlet from the Gulf of St. Lawrence is *Chaleur Bay*, which is navigable over its whole extent. From the Atlantic the large *Bay of Fundy* stretches northward between Nova Scotia and New Brunswick. The whole of the coast along the Gulf of St. Lawrence and on the Atlantic is deeply indented, so that good harbors are very numerous. The ports on the gulf coast are frozen during the winter, but those on the shores of the Atlantic and of the Bay of Fundy are open at all seasons.

Courtesy of Dept. of Interior, Ottawa

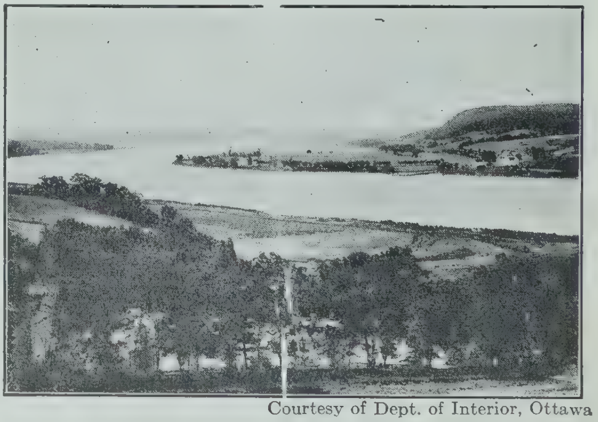
A typical Coast Scene, Cape Blomidon, Nova Scotia

The shores at the head of the Bay of Fundy offer one of the most curious sights in the world. Twice every day the water of the sea recedes until there are wide expanses of red mud extending for miles where a few hours before was deep water. Boats at wharves are left high and dry upon the mud. Then the waters return, rushing back again over the mud flats. In some parts of the bay the difference between high and low water is as much as fifty feet. This rise and fall of the ocean water is called the *tide*, and is more noticeable in the Bay of Fundy than anywhere else in the world.

The high tides of the Bay of Fundy serve two useful purposes. The rush of the waters along the bay prevents ice from forming in winter, and so keeps open important harbors, such as those of *St. John* and *St. Andrews*. At the head of the bay the tides have deposited a thick layer of red soil. Dikes have been built to keep the water from the land, which produces heavy crops of hay for years without needing fertilizers of any kind. When this land does become exhausted, the dikes are opened, the water is let in, and so a fresh layer of good soil is obtained to restore the fertility of the fields.

Drainage.—The whole Appalachian Region is well watered. New Brunswick, in particular, is drained by many rivers, some of them of very large size. These have innumerable branches, so that the country is covered with a perfect network of streams. The best farm-land in New Brunswick, with the exception of the diked land around the head of the Bay of Fundy, is found in the valleys of the rivers.

The *St. John* is the largest and most important river of the whole Appalachian Region. It drains one-half of the province of New Brunswick. After rising in the state of *Maine*, it forms the boundary between that state and New Brunswick for eighty miles, then enters Canadian territory, tumbles over *Grand Falls*, a drop of seventy-five feet, and sweeps southward towards the Bay of Fundy.

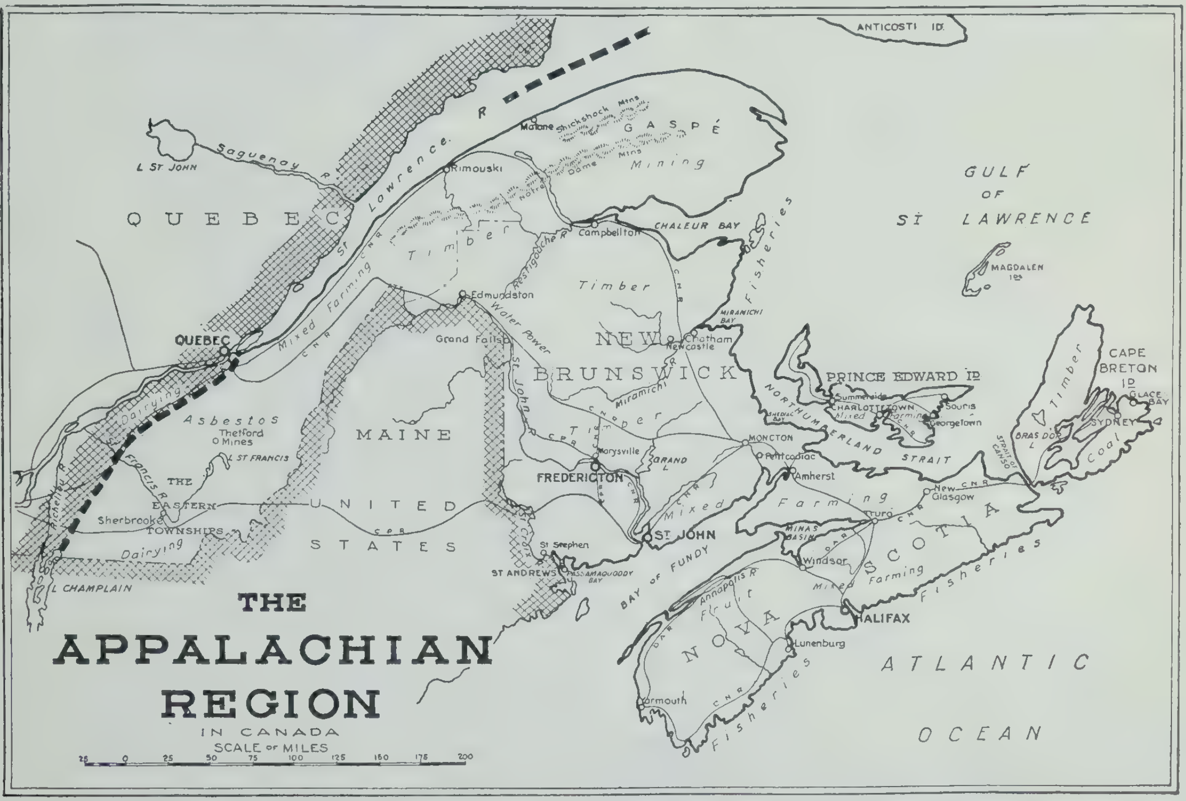


Courtesy of Dept. of Interior, Ottawa

General View of the St. John River Valley at Evandale

At its mouth is the city of St. John, the chief port of New Brunswick.

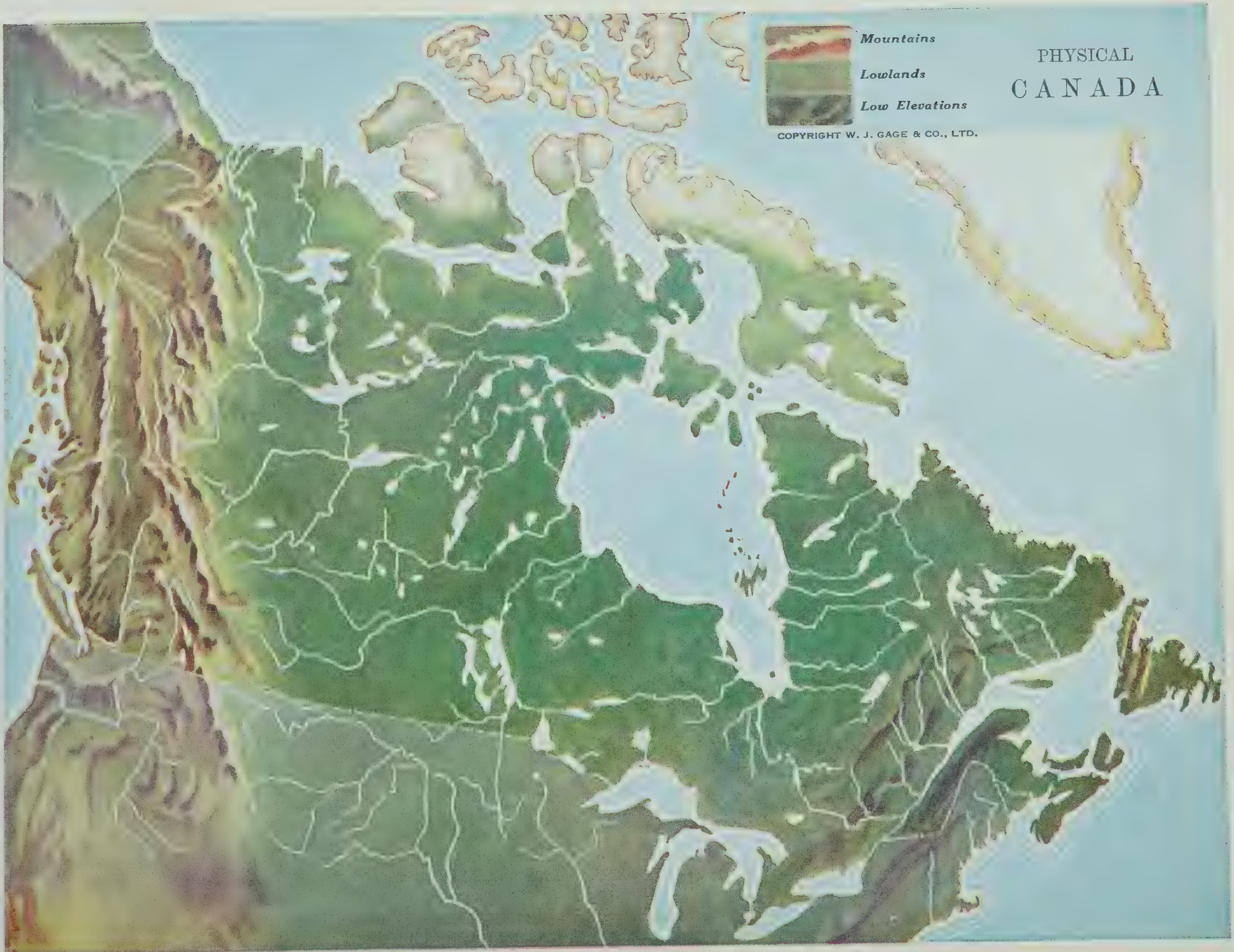
The St. John flows into the harbor of St. John through a narrow gorge. The tide in the harbor rises twenty-five feet. At low water the level of the river is twelve feet or so above that of the sea. At low water, therefore, the river pours its water through the gorge into the harbor. At high water, however, the level of the harbor is twelve feet or so above that of the river, so that at high tide the water rushes in the opposite direction through the gorge from the harbor into the river. These "reversible falls" are unique. They are a considerable hindrance to navigation, as vessels can pass in safety through the gorge only at four periods of ten or fifteen minutes each in the twenty-four hours, when the river level and harbor level are even.



Next in importance to the St. John is the *Miramichi*, which flows into the Gulf of St. Lawrence. It drains the whole central section of New Brunswick. Its mouth forms an excellent harbor, upon which are built the thriving towns of *Newcastle* and *Chatham*. The *Restigouche*, which empties into the Bay of Chaleur, forms part of the boundary between Quebec and New Brunswick. In a land where every stream and river teems with fish, the Restigouche takes first place as a trout and salmon stream. The *Petitcodiac* is famous for its "tidal bore," which, as far up the river as *Moncton*, reaches a height of from four to six feet. The *St. Croix*, which flows into the Bay of Fundy at *Passamaquoddy Bay*, forms part of the boundary line between New Brunswick and the state of Maine.

There are many rivers in Nova Scotia, but these are naturally short and small, as they flow, for the most part, across the narrow peninsula. The *Annapolis*, flowing along the western margin of the peninsula, drains a very fertile valley in which apples of the finest quality are the main crop.

Climate.—The climate of the Appalachian Region has not such great extremes of temperature as the interior of Canada in the same latitude. The rainfall is great, ranging from an annual fall of fifty inches a year at Halifax



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to about thirty-five in Western New Brunswick. The snowfall in winter is very heavy. In the coastal district fogs sweeping in from the sea are frequent during the summer. These, however, do not penetrate more than a few miles inland. The climate of the Atlantic coast of Canada is much more extreme than that of the Pacific coast. This is partly due to the cold Labrador Current, and partly to the fact that the steady west winds come to the east coast from the interior of the continent, which is very cold in winter, whereas on the west coast they come from over the warm waters of the Pacific and raise the winter temperature very materially.

Lumbering.—Much of the Appalachian Region is still forested—Gaspé with trees suitable for the making of pulp and paper, New Brunswick with extensive stands of both pulpwood and timber trees, and Nova Scotia with much smaller but still valuable forest areas. There are several pulp and paper mills in the Eastern Townships, in New Brunswick, and in Nova Scotia. Spruce, pine, and hemlock lumber is the chief export of New Brunswick. Thus the forest areas of the Appalachian Region provide profitable work for many of its inhabitants.

Courtesy of Dept. of Interior, Ottawa
A Lumber Camp in New Brunswick

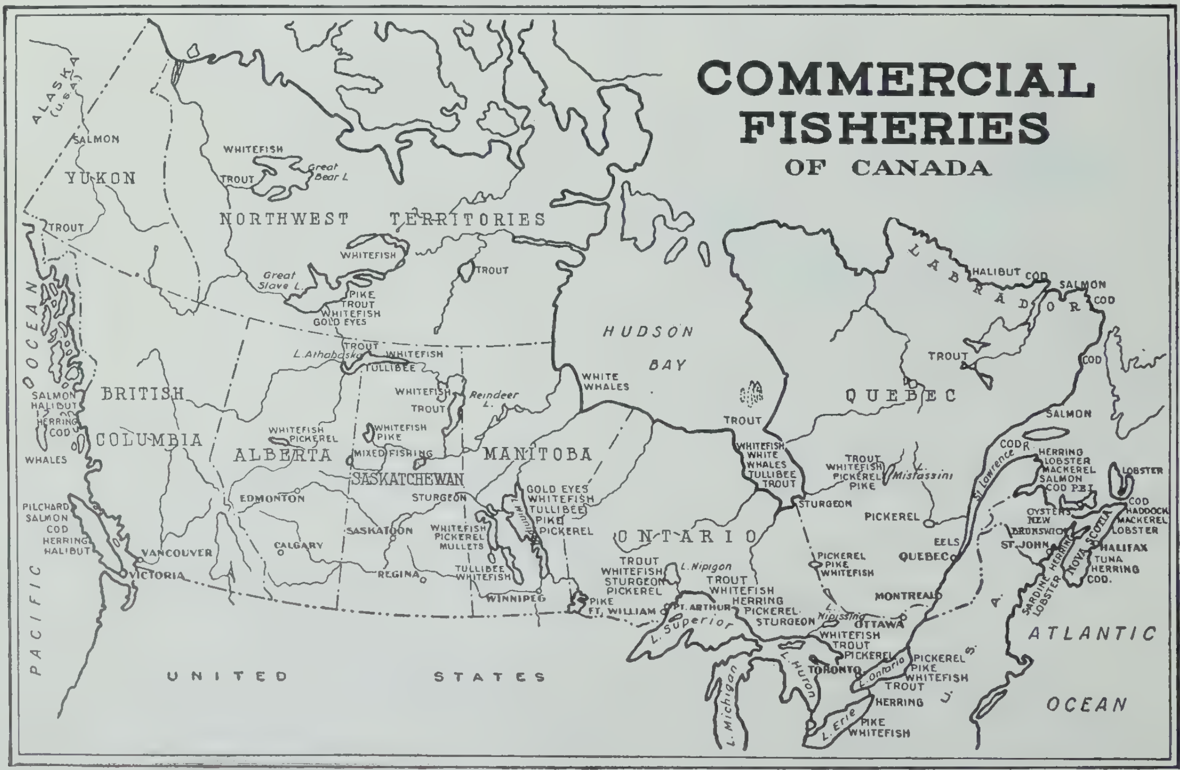
Farming.—There are, of course, many districts where farming is the chief occupation of the people. The Eastern Townships of Quebec are a mixed farming and dairying district. Maple syrup and maple sugar are also important products. The lower valleys of the rivers of New Brunswick are very fertile. The St. John Valley in particular is noted for its splendid fruit. On the diked lands at the head of the Bay of Fundy hay is the chief crop. The Annapolis Valley in Nova Scotia is an unending succession of apple orchards—a beautiful sight when in full blossom in the spring or in full fruitage in the fall. Prince Edward Island is all under cultivation. In general, the main crops of the Appalachian Region are oats, hay, and potatoes, although other cereals, fodders, and vegetables are grown in large quantities.

An Apple Orchard in bloom, at Starr's Point, Nova Scotia

Fur-farming is a new type of industry which has grown rapidly in the last few years in the Appalachian Region. It began in Prince Edward Island with the breeding of silver foxes in captivity. Fox-farming proved so profitable that it spread rapidly, and now there are many such farms producing millions of dollars worth of furs annually. The fur-farmers being so successful with foxes, were encouraged to try other animals as well, and now mink, otter, skunk, and other fur-bearing animals are being reared in captivity.

Fishing.—The waters about the coasts of the Maritime Provinces swarm with food-fishes of many kinds. Naturally the people living on the coast turn to the sea for their livelihood. In addition to the deep-sea fishermen, who go far out to the Grand Banks of Newfoundland for cod and halibut, there are thousands of in-shore fishermen, who take their catch of herring, sardines, mackerel, or haddock within ten or twelve miles from shore. Lobsters and oysters also are valuable sources of income for the in-shore fishers. In fact, the catch of lobsters is of greater value than even that of the cod.

Mining.—The Appalachian Region has considerable mineral wealth. Nova Scotia has coal in abundance, and her coal mines have a large annual output, although somewhat less in tonnage than that of Alberta. The largest mines are close to *Sydney* in *Cape Breton Island.* Nova Scotia, in addition to supplying her own needs, is able to export coal to the other Maritime Provinces, to Quebec, and to the New England States. Gypsum, from which wall-plaster is made, is mined in Nova Scotia and New Brunswick. *Thetford Mines*, a town in the Eastern Townships of Quebec, produces nearly all the world's supply of asbestos. This mineral is fire-proof, and as it may be manufactured into various cloth-like fabrics, is exceedingly useful for making fire-proof curtains for theatre stages, for covering steam and furnace pipes, and for many such purposes. Much of the product of Thetford Mines is exported to various parts of the United States.



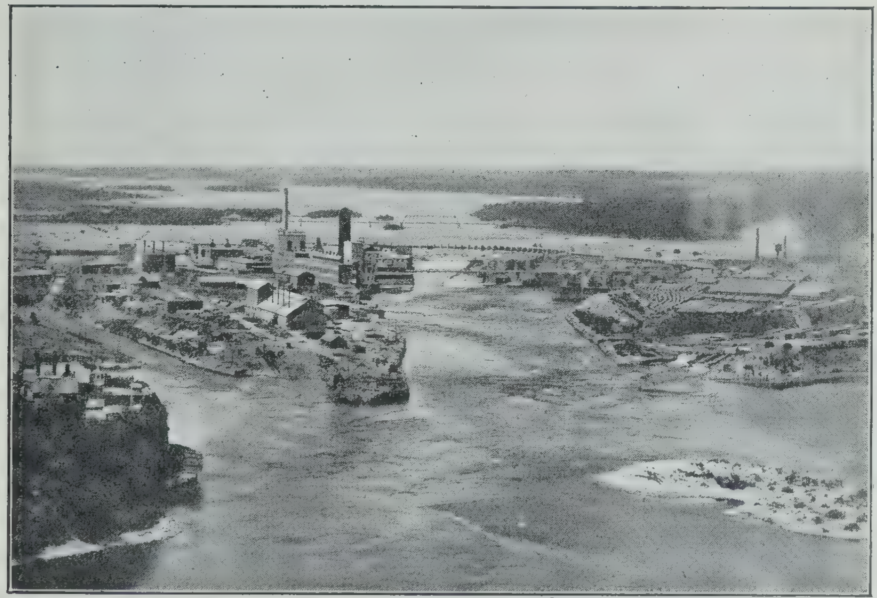
COMMERCIAL FISHERIES OF CANADA

Fishing Fleet, Lunenburg, Nova Scotia

Manufacturing.—The factories of the Appalachian Region are largely devoted to working up the raw materials found within that area. Nova Scotia, with its large coal mines, has developed a very large iron and steel industry. The iron ore which is smelted there is brought easily and cheaply by water from the very rich *Wabana* mines in Newfoundland. Sydney, in Cape Breton, is the centre of this industry. Saw-mills and pulp and paper mills handle the output of logs and pulpwood from the forest areas. Factories for the canning of fish—especially sardines and lobsters—are found at many places on the coast. There are, however, two important industries which depend upon imported raw materials. Raw cotton, imported from the United States, is spun and worked up into various fabrics in several large cotton-mills. Raw sugar, brought from the West Indies, is refined at centres in both New Brunswick and Nova Scotia. There are other manufacturing industries of less importance such as woollen mills, furniture factories, and boot and shoe factories.

Helps.—Trace on an outline map each of the great physical divisions of Canada. Note carefully their relationship to one another. Compare them roughly in size. Note on the map on page 31 the relation of the Appalachian Region to the other physical divisions. On an outline map of your own making mark the mountain ranges and indicate the watersheds. What provinces of Canada are included in the Appalachian Region? On your map indicate the position of these provinces. Compare the coast-line on the Gulf of St. Lawrence with that on the Atlantic. Of what commercial importance are the high tides of the Bay of Fundy? On your outline map fill in the more important rivers. Give a brief description of each river. What is the commercial importance of each? What would be the effect on the Region, if the rainfall and the snowfall were only half as great? What is the effect of the Labrador Current on the climate?

Write an account of not more than a hundred words on the lumbering industry in the Appalachian Region. If the entire Region were not so very well supplied with rivers what would be the effect on the lumbering industry? From your knowledge of the surface, would you judge that the Region would be a good farming country? Why? Why is the Annapolis Valley so suited to fruit-growing? Compare in this respect with the valley of the Restigouche. Why is the Region so suited to fur-farming? Give a brief description of the fishing industry. What effect has the coast-line on the industry? What is the value of the Newfoundland Banks to the fishermen of the Region? On your outline map locate the chief mineral regions. Show how these are related to the chief manufacturing interests. What is the importance of the coal mines to the Region? Show clearly the relationship between the natural resources of the Region and its manufactures. To what extent do the industries depend upon the importation of raw material? Show by reference to the map of the world the geographic relation of the Region to (*a*) the West Indies; (*b*) the United States; (*c*) Great Britain. Make a list of the chief products of the Appalachian Region.



Courtesy of Dept. of Interior, Ottawa

The Chaudière Falls at Ottawa

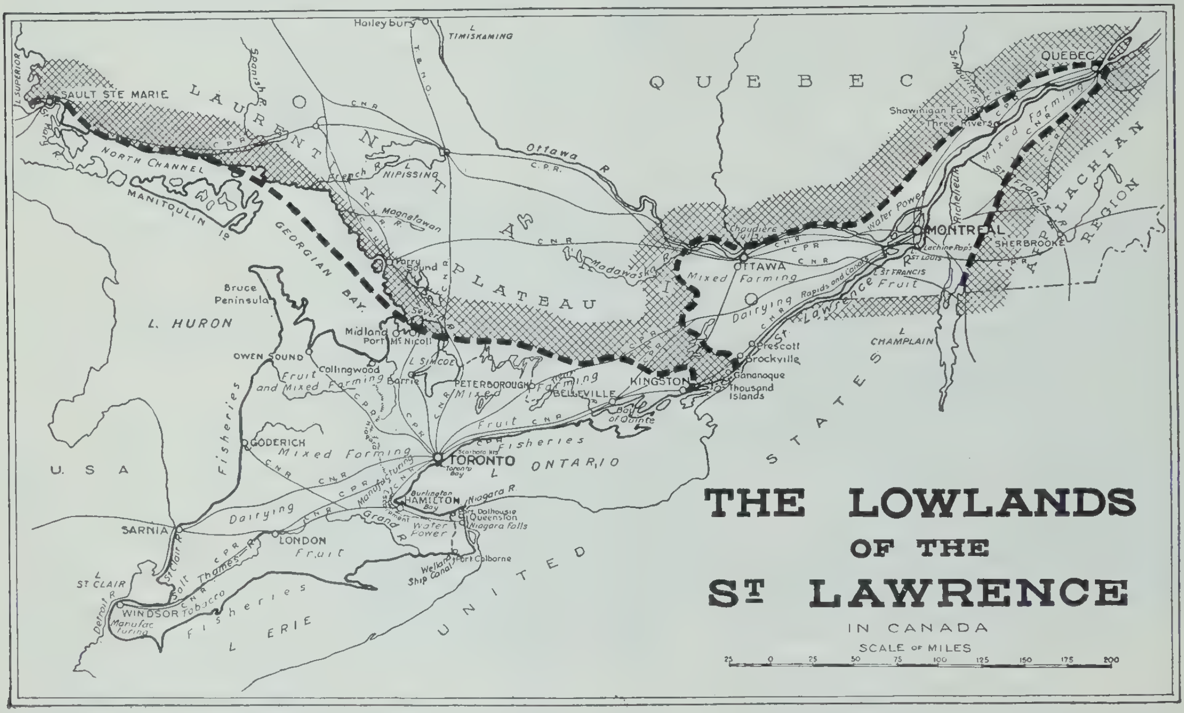
Note the pulp and paper mills driven by power from the falls.

THE LOWLANDS OF THE ST. LAWRENCE

Position.—The Lowlands of the St. Lawrence comprise the low-lying fertile areas of the valley of the St. Lawrence River. These areas are partly in the province of Quebec and partly in Ontario. They are bounded on the north by the Laurentian Plateau, on the east by the Appalachian Region, and on the south by the United States and *Lakes Ontario* and *Erie.* Lake Huron limits them towards the west. In Quebec the lowland area is a broad valley lying between mountain ranges. In Ontario it includes the wide plain extending northward from Lake Ontario to the rough, broken hills of the Laurentian Plateau, and the peninsula enclosed by Lakes Ontario, Erie, and Huron.

Surface.—The Lowlands of the St. Lawrence begin a short distance east of *Quebec* city. From there to the eastern end of Lake Ontario the country is almost level. A slightly higher and more hilly plain extends along the north shore of Lake Ontario. This plain ends at the western end of Lake Ontario. At that point there is a sudden rise in the land known as the *Niagara Escarpment*, which cuts across the south-western part of Ontario from Lake Ontario to *Georgian Bay*. West and south of the escarpment the land is very level, and slopes gently down to Lakes Erie and Huron.

Drainage.—This whole area of fertile land is drained by the St. Lawrence, including the Great Lakes, and its tributaries. The most important tributary of the St. Lawrence crossing the Lowlands is the *Ottawa*, which drains an area of 80,000 square miles in the provinces of Quebec and Ontario. After flowing for 600 miles, marking throughout a great part of its course the boundary between the two provinces, it empties into the St. Lawrence by four mouths, forming several islands, of which the most important is the *Island of Montreal*. With the help of two small canals, the Ottawa is navigable from Montreal to Ottawa. There the *Chaudière Falls* form an impassable barrier, although steamers ply on the upper reaches of the river. The waters of the Ottawa, like those of all rivers flowing from the Laurentian Highland, are dark in color. The water poured into the St. Lawrence does not mix with the bright waters drawn by the river from the great settling-basins of the Great Lakes, but forms a separate current readily distinguishable from that of the main stream.

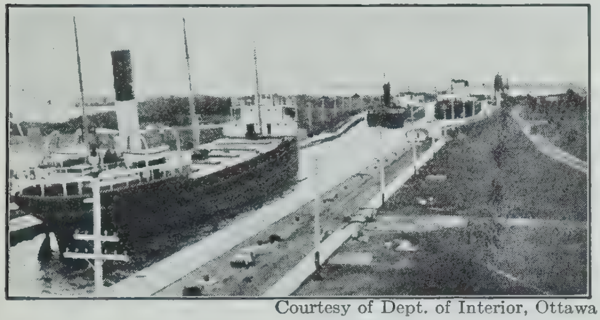


Other important tributaries of the St. Lawrence flowing through the Lowlands are the *St. Maurice* from the north and the *Richelieu* from the south. The *Shawinigan Falls* on the former are among the finest in Canada. Electric power derived from them serves Montreal and vicinity. The Richelieu, in addition to providing power, is part of an important waterway, which leads through *Lake Champlain* into the valley of the Hudson River in the United States.

The St. Lawrence River, with the Great Lakes, forms one of the longest and most important waterways in the world. It extends far into the heart of the continent. In its course it expands into five great lakes, four of which form part of the boundary of

Canada—Lakes Superior, Huron, Erie, and Ontario. These lakes, together with *Lake Michigan*, which is wholly within the United States, contain as much fresh water as all the other lakes of the world combined.

The first and greatest expansion of the St. Lawrence, Lake Superior, is 383 miles long, with an average breadth of eighty-four miles. This deep inland sea is subject to violent storms, which lash its waters into a fury rivalling that of the stormy North Atlantic. The shores are bold and steep, with cliffs of rock rising 300 to 1,500 feet above the water. Numerous islands fringe the coast, and in their lee vessels find shelter from storms. Lake Superior receives its main water-supply from *Lake Nipigon*, 1,450 square miles in area, through the *Nipigon River*. There are, however, many other tributaries.


Courtesy of Dept. of Interior, Ottawa

Four down- and two up-bound Vessels in the upper Approach to the Sault Ste. Marie Canal

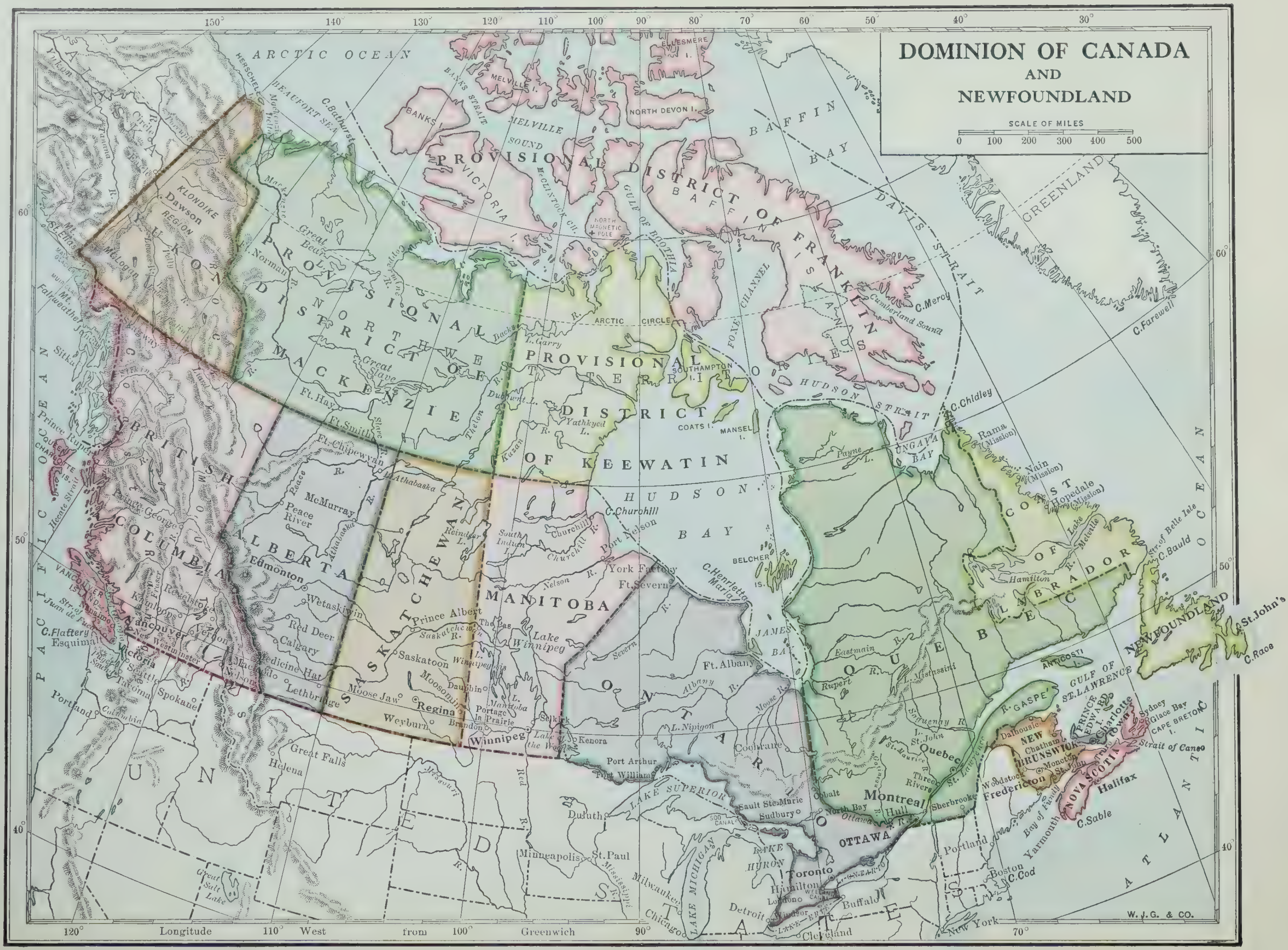
Lake Superior empties its water into Lake Huron through the *St. Mary River*, sixty-three miles in length. The river is navigable throughout its entire course, except at one point, where there is a fall of twenty-two feet in less than a mile. To overcome this difficulty, two canals have been constructed, one on the American and one on the Canadian side of the river. The Canadian canal consists of a single lock 900 feet in length, with a width of sixty feet and a depth of eighteen feet three inches. The tonnage of freight passing through the *Soo Canals* during the seven to eight months of open navigation is three times as great as that through the *Suez Canal* in the whole year.

Lake Huron is 247 miles in length, with an average breadth of ninety-two miles. Georgian Bay is separated from the lake proper by *Bruce Peninsula* and *Manitoulin Island.* Between Manitoulin Island and the mainland is the *North Channel*, a picturesque sheet of water bordered by high rocky cliffs along the north shore. In Georgian Bay the beauty of the scenery is enhanced by a great number of islands—variously estimated at 30,000 to 47,000—with which it is bordered. Several important rivers flow into the North Channel and Georgian Bay. The *Spanish River* traverses an important timber area. The *French*, draining *Lake Nipissing*, the *Severn* providing an outlet for the waters of *Lake Simcoe*, and the *Magnetawan* are the chief feeders of the bay upon the east.

At the southern extremity Lake Huron narrows and discharges its waters into *Lake St. Clair* through the *St. Clair River*, thirty miles in length and navigable throughout. This lake, which is about twenty-five miles long and of almost equal width, is very shallow and muddy. Through it a channel sixteen feet deep and 300 feet wide is kept

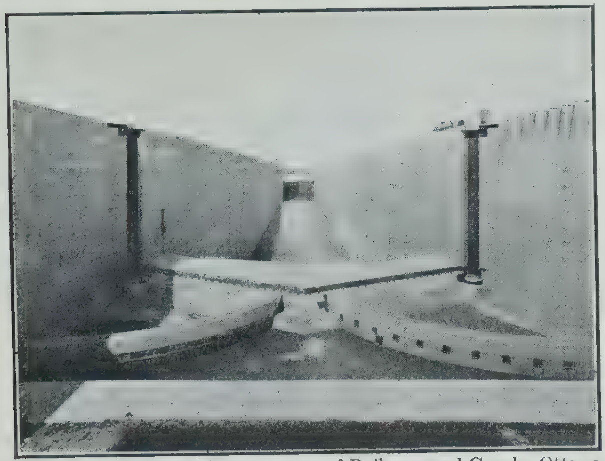
A general View of Niagara Falls

The American Falls are on the left; the Horseshoe, or Canadian Falls, at the back. Note the power-house beside the Horseshoe Falls and the International Bridge in the foreground.


DOMINION OF CANADA
AND
NEWFOUNDLAND
SCALE OF MILES
0 100 200 300 400 500
ARCTIC OCEAN
BEAUFORT SEA
HERSCHEL I.
C.Bathurst
BANKS STRAIT
BANKS
MELVILLE I.
ELLESMERE I.
NORTH DEVON I.
MELVILLE SOUND
VICTORIA I.
McCLINTOCK CH.
NORTH MAGNETIC POLE
GULF OF BOOTHIA
PROVISIONAL DISTRICT OF FRANKLIN
BAFFIN I.
ISLANDS
BAFFIN BAY
DAVIS STRAIT
GREENLAND
C.Farewell
C.Mercy
Cumberland Sound
FOXE CHANNEL
ARCTIC CIRCLE
SOUTHAMPTON I.
COATS I.
MANSEL I.
HUDSON STRAIT
C.Chidley
UNGAVA BAY
Payne L.
Rama (Mission)
Nain (Mission)
Hopedale (Mission)
COAST OF LABRADOR
Lake Melville
Hamilton R.
Str. of Belle Isle
C.Bauld
NEWFOUNDLAND
St.John's
C.Race
ANTICOSTI I.
GULF OF ST.LAWRENCE
GASPÉ
PRINCE EDWARD I.
Charlottetown
Sydney
Glace Bay
CAPE BRETON I.
Strait of Canso
NOVA SCOTIA
Halifax
C.Sable
Yarmouth
Bay of Fundy
NEW BRUNSWICK
Dalhousie
Chatham
Moncton
St.John
Woodstock
Fredericton
QUEBEC
Quebec
L.Mistassini
Eastmain R.
Rupert R.
Saguenay R.
L.St.John
St.Maurice R.
Three Rivers
St. Lawrence R.
Sherbrooke
Montreal
Hull
Ottawa R.
OTTAWA
North Bay
Cobalt
Moose R.
JAMES BAY
BELCHER IS.
C.Henrietta Maria
HUDSON BAY
C.Churchill
Port Nelson
York Factory
Ft.Severn
Severn R.
Ft.Albany
Albany R.
ONTARIO
L.Nipigon
Cochrane
Port Arthur
Fort William
LAKE SUPERIOR
Sault Ste.Marie
Sudbury
SOO CANAL
LAKE HURON
LAKE MICHIGAN
Toronto
Hamilton
London
Windsor
WELLAND CANAL
LAKE ONTARIO
LAKE ERIE
Kenora
Lake of the Woods
Selkirk
Winnipeg
MANITOBA
Lake Winnipeg
L.Winnipegosis
L.Manitoba
Portage la Prairie
Brandon
Dauphin
The Pas
Nelson R.
Churchill R.
South Indian L.
Reindeer L.
SASKATCHEWAN
Prince Albert
Saskatchewan R.
Saskatoon
Moosomin
Regina
Moose Jaw
Weyburn
Athabaska L.
ALBERTA
Ft.Chipewyan
Athabaska R.
McMurray
Peace River
Peace R.
Edmonton
Wetaskiwin
Red Deer
Calgary
Medicine Hat
Lethbridge
BRITISH COLUMBIA
Prince Rupert
QUEEN CHARLOTTE IS.
Hecate Strait
Prince George
Fraser R.
Kamloops
Revelstoke
Vernon
Nelson
Vancouver
New Westminster
Victoria
VANCOUVER I.
Nanaimo
Str. of Georgia
Str. of Juan de Fuca
C.Flattery
Esquimalt
Puget Sound
Seattle
Tacoma
Spokane
Portland
Columbia R.
Skagway
Juneau
Sitka
Mt. Fairweather
MUIR GLACIER
MALASPINA GLACIER
Mt. St.Elias
Mt.Logan
YUKON
Dawson
KLONDIKE REGION
Lewes R.
Pelly R.
Porcupine R.
Circle
Tanana R.
Yukon R.
ALASKA
Liard R.
ROCKY MOUNTAINS
PROVISIONAL DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES
PROVISIONAL DISTRICT OF KEEWATIN
Mackenzie R.
Mackenzie Delta
Norman
Great Bear L.
Coppermine R.
Great Slave L.
Ft.Hay
Ft.Smith
Slave R.
Thelon R.
Dubawnt L.
Kazan R.
Yathkyed L.
Backs R.
L.Garry
PACIFIC OCEAN
ATLANTIC OCEAN
UNITED STATES
Great Falls
Helena
Great Salt Lake
Missouri R.
Red R.
Duluth
Minneapolis
St.Paul
Mississippi R.
Milwaukee
Chicago
Detroit
Cleveland
Buffalo
New York
Boston
C.Cod
Portland
Longitude West from Greenwich
150° 140° 130° 120° 110° 100° 90° 80° 70° 60° 50° 40° 30°
60° 50° 40°
W. J. G. & CO.

open by dredging. The *Detroit River*, thirty-two miles long, connects Lake St. Clair with Lake Erie.

Lake Erie, the shallowest of the Great Lakes, is 241 miles long, with an average width of forty-one miles. Owing to the shallow water, even a light gale quickly raises a heavy sea, so that the lake is often very rough.



Courtesy of Department of Railways and Canals, Ottawa

The Welland Ship Canal

The illustration shows Lock No. 1 of the new canal.

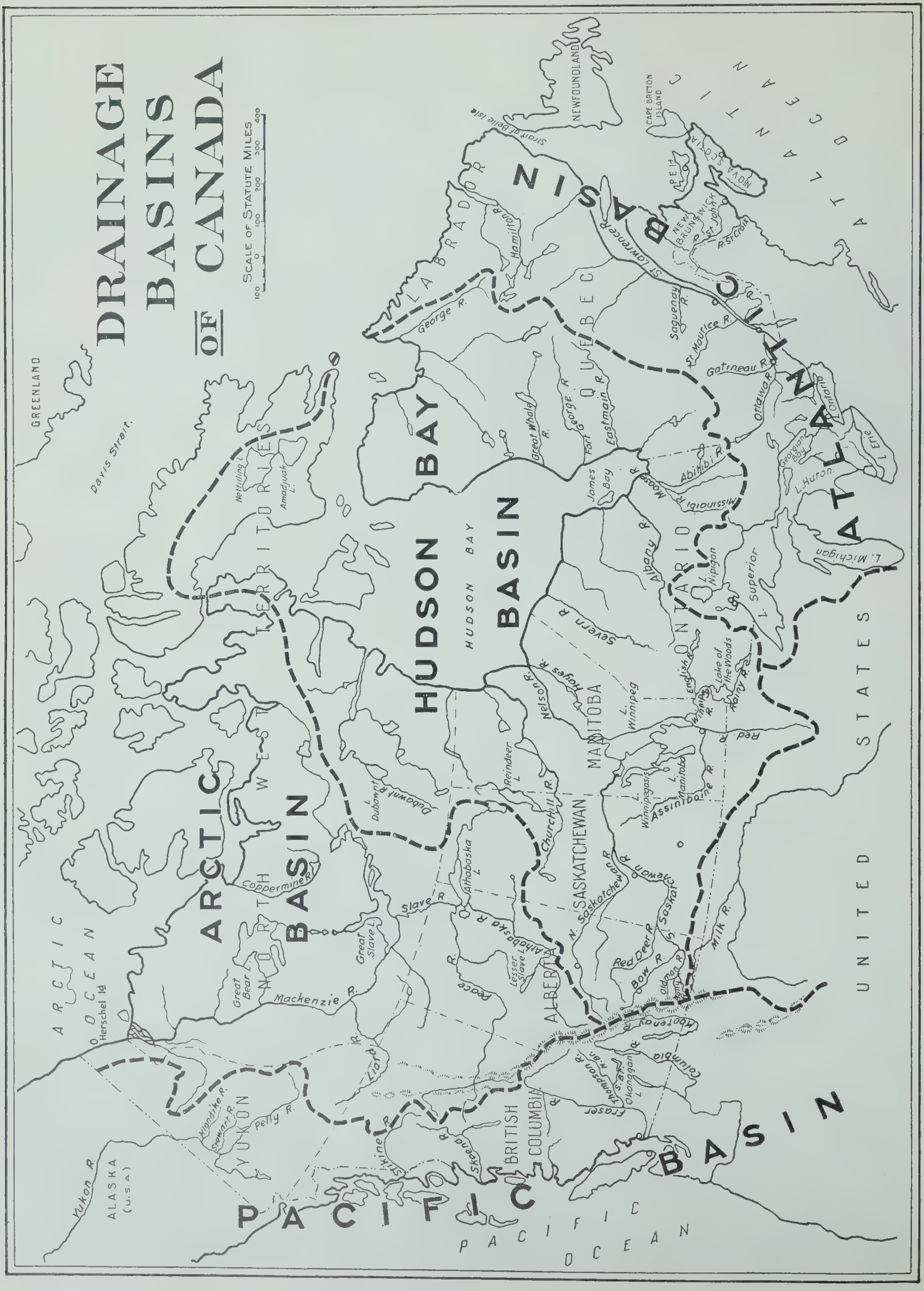
The *Niagara River* carries the waters of Lake Erie to Lake Ontario. In its course it offers one of the grandest sights in the world, where the waters of the river plunge over the edge of the Niagara escarpment in a sheer drop of 158 feet. Below the falls the river runs rapidly between steep cliffs. At one place the river is compressed to a width of 300 feet between cliffs of rock 300 feet high. There the waters swirl in a seething whirlpool, with a wild beauty rivalling that of the falls themselves. At *Queenston*, seven miles from the mouth of the river, the waters again become tranquil. Steamers from Lake Ontario ascend the river to this point.

The *Welland Canal*, over twenty-six miles long with a lock for every mile, was cut by the Dominion Government between Lakes Erie and Ontario. Thus the falls and rapids of Niagara no longer bar navigation, as they did in the days of La Salle, who was forced to build a vessel above the falls before he could navigate Lake Erie. Unfortunately, however, the very large freighters used on the Upper Lakes are too big to pass through the Welland Canal. Therefore, their cargoes of ore or grain from the Lake Superior ports must be unloaded at the ports of Lake Erie and shipped from them either by rail or by smaller boats. The *Welland Ship Canal*, now being constructed from *Port Colborne* on Lake Erie to *Port Weller* on Lake Ontario, will have a length of twenty-five miles. There are seven locks of 820 feet in length, with a width of eighty feet and a depth of thirty feet. The route is not quite the same as that of the old canal.

Lake Ontario, the smallest of the Great Lakes, is 180 miles long, with an average breadth of forty-two miles. Its shores are quite low, the highest elevation being 350 feet at *Scarborough Heights*, not far from *Toronto*. The principal inlets are *Burlington Bay* at the western extremity of the lake, *Toronto Bay*, and the *Bay of Quinte* at the north-eastern end.

The shores of Lake Ontario narrow as *Kingston* is approached, and a little below that city the St. Lawrence River proper begins. Between *Gananoque* and *Brockville* the river passes through the labyrinth of *The Thousand Islands*, which by their picturesque beauty attract many visitors every summer. Below *Prescott* the river narrows, the stream quickens, and the water rushes fiercely down the *Long Sault*. Then it widens out into *Lake St. Francis*. Down the *Cedars* and the *Cascade Rapids* through *Lake St. Louis* and past the mouth of the Ottawa the river flows, to enter upon its headlong rush through the treacherous *Lachine Rapids*, just above Montreal. These rapids do not prevent navigation, as the Dominion Government

A Scene in the Thousand Islands



DRAINAGE BASINS OF CANADA

has built and maintains canals around them.

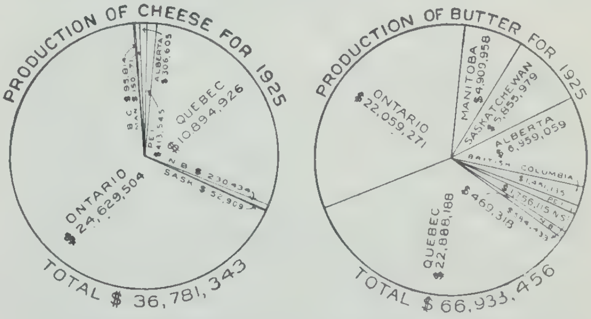
As the St. Lawrence passes out of the Lowlands on its way to the sea, it increases in breadth. Its banks are clear-cut to the ocean's edge, and a broad, deep channel extends from its mouth into the heart of the Atlantic. Above Quebec its average width is two miles; below that city it rapidly widens. At the *Saguenay* it is twenty miles wide, at *Matane* thirty miles, at *Anticosti* one hundred miles. The largest ocean steamers ascend the river to Montreal, almost 1,000 miles inland from the *Strait of Belle Isle*. Vessels can pass from the head of Lake Superior right out to the Atlantic Ocean, provided that they do not draw more than fourteen feet of water.

The Lachine Rapids, near Montreal

This wonderful inland waterway has been of great benefit to the commercial development of the Lowlands of the St. Lawrence. Upon it bulky goods, such as grain and ore are carried much more cheaply than by rail. The rapids on the St. Mary River, and the falls at Niagara and on the Ottawa, the St. Maurice, and the Richelieu Rivers, generate quantities of cheap electrical power. The Great Lakes are the most valuable freshwater fishing grounds in the world. Further, the Great Lakes make the temperature more equable in the adjacent districts, so that tender fruits can be grown which otherwise would not withstand the extremes of our Canadian climate. These are the four chief contributions made by the St. Lawrence, its tributaries, and its lakes to the welfare of the people of Canada.

Climate.—The western portion of the Lowlands of the St. Lawrence has milder and shorter winters than the lowlands in the valley of the St. Lawrence River proper. This is partly due to their more southerly latitude, but much more to the influence of the Great Lakes, which warm somewhat the west winds which sweep over them in winter. In the summer the hot winds from the south are cooled in passing across the lakes, and so the summers too are not so extreme. The rainfall is well distributed through the spring and summer months, and serious droughts are unknown. The snowfall is heavy, particularly in the eastern parts of the Lowlands.

Farming.—The Lowlands of the St. Lawrence form one of the finest farming districts of the world. All the hardy cereals, hay, roots, and many varieties of fruits grow well in its fertile soil and genial climate. Although much wheat is still grown, the farmers have found that stock-raising and dairying are more profitable. Much fresh milk is needed by the people living in the large cities of Ontario and Quebec. The milk not sold in this way is manufactured into cheese, or the cream is separated and made into butter. The skim milk, butter milk, and whey are fed to hogs and calves. A great deal of milk is also used in the manufacture of dried or condensed milk. Clover, fodder, corn, turnips, and mangolds are grown extensively to provide food for the herds of cattle during the winter months.



Value of Cheese and Butter Production, 1925

Although the hardier fruits, such as apples, plums, and cherries are found in the orchard of almost every farm, the chief fruit-growing districts are in the lake peninsula of

Western Ontario and on the island of Montreal and vicinity. There tender fruits, such as peaches, pears, and grapes, tomatoes and melons, are grown in enormous quantities. The individual fruit-farms are, as a rule, much smaller than grain or dairy farms, ranging in size from ten to fifty acres. Much of the fruit is shipped fresh to the cities of Ontario and Quebec; some is sent west to the Prairie Provinces; much of the apple crop is exported to Great Britain. The balance of the fruit crop is canned, and in that form is sold throughout the whole Dominion and exported as well to other countries.

Courtesy of Dept. of Interior, Ottawa

Tobacco Harvest

Tobacco is another crop which is growing steadily in importance. Much tobacco is grown in the St. Lawrence Valley in Quebec and along the shore of Lake Erie in Ontario.

Fishing.—The fishing industry is of great importance to the Lowlands. The Great Lakes that lie within the region abound in fish, principally trout, herring, whitefish, pike, pickerel, perch, and sturgeon. Great care is taken to conserve the supply of fish. Fish hatcheries are maintained by the various governments for the purpose of re-stocking the lakes and rivers.

Mineral and Forest Products.—There is little mineral wealth in this division of Canada. Natural gas is found along the Lake Erie shore, and for many years the city of *Hamilton* and many small towns were supplied entirely from wells in that area. Lately, however, the supply has fallen off. Salt is obtained from beds close to the Detroit River and Lake Huron. Petroleum also occurs in this district, and for years the wells there yielded a considerable quantity of this valuable material. Only a few of the oil wells are now producing, and those only to a very limited extent.

Originally the Lowlands were heavily forested, but as the land was settled the forests were cut down. Nearly every farm still has a wood-lot large enough to supply its owners with plenty of fuel. Lumbering on a large scale, however, is a thing of the past in this region.

Manufacturing.—The cities of the Lowlands of the St. Lawrence are the chief manufacturing centres of Canada. Power is one of the chief needs of an industrial area, and this is obtained in abundance and very cheaply from the water-powers with which the Lowlands are so well supplied. Transportation is the second great requisite. Here again the cities of the Lowlands are very favorably placed. In addition to the St. Lawrence waterway, many railways serve this area, so that raw materials can be easily brought in and manufactured products shipped out. The list of manufactures includes almost every article imaginable, ranging from pins to pianos and from thread to threshing-machines. Among the more

A large Milling Company, Port Colborne

important are iron and steel goods of all kinds, textiles, leather goods, agricultural implements, automobiles, furniture, boots and shoes, and food products of every kind.

We need not be surprised, then, that more than half of all the people of Canada live in this area. Fertile farms, great water-powers, and splendid transportation facilities have all helped to make this part of Canada rich and prosperous. It has other advantages also. Just to the north, along the southern border of the Laurentian Plateau, are boundless forests and vast quantities of mineral wealth—gold, silver, copper, and nickel. The mines, the lumber-camps, the saw-mills, and the pulp-mills of this northern area provide the manufacturing cities with many of their needs, and in turn offer a ready market for a good deal of the produce of the Lowland farms, and for the tools, machinery, and other manufactures of the Lowland cities.

Helps.—On an outline map mark very carefully the Lowlands of the St. Lawrence. Locate the Lowlands in relation to the other great natural physical regions. Describe briefly the surface. On your map locate each of the large lakes and rivers, paying special attention to the St. Lawrence system. Describe briefly each of the Great Lakes. Compare them as to area. Indicate on your outline map the obstructions to navigation from the head of the Great Lakes to the mouth of the St. Lawrence, showing how each obstruction is overcome. What is the importance of the Soo Canal? the Welland Canal? What is the value of the Great Lakes to Canada? If the level of the Great Lakes were, for some reason, to be lowered three feet, what would be the effect on the Lowlands? If the level were to be raised three feet, what would be the result? Indicate on your outline map the portions of the provinces included in the Lowlands. Compare the climate of the Lowlands with that of the Appalachian Region. What is the advantage of the heavy winter snowfall? Is an abundant snowfall so important in the Lowlands as it is in the Appalachian Region? Why?

Why are the Lowlands so peculiarly adapted to grain-growing, fruit-raising, and stock-farming? Compare in this respect with the Appalachian Region. Consult the fisheries map of Canada on page 36 and note the importance of the fisheries in the Lowlands. Why is the lack of minerals, especially coal, not so severely felt? What would be the result, if there were extensive coal fields in the northern part of Ontario and Quebec? Why is there very little lumbering in the Lowlands? What would be the effect if this region were heavily forested? Locate on the map the chief water-powers within the Lowlands. What is the value of water-power to (*a*) the farmer; (*b*) the city-dweller; (*c*) the manufacturer? Give as many reasons as you can why the Lowlands should be such a great manufacturing district. Where is the raw material obtained? Make a list of the articles with which you are familiar that are made in the Lowlands. Why are the Lowlands so thickly populated? Why are there so many large cities?

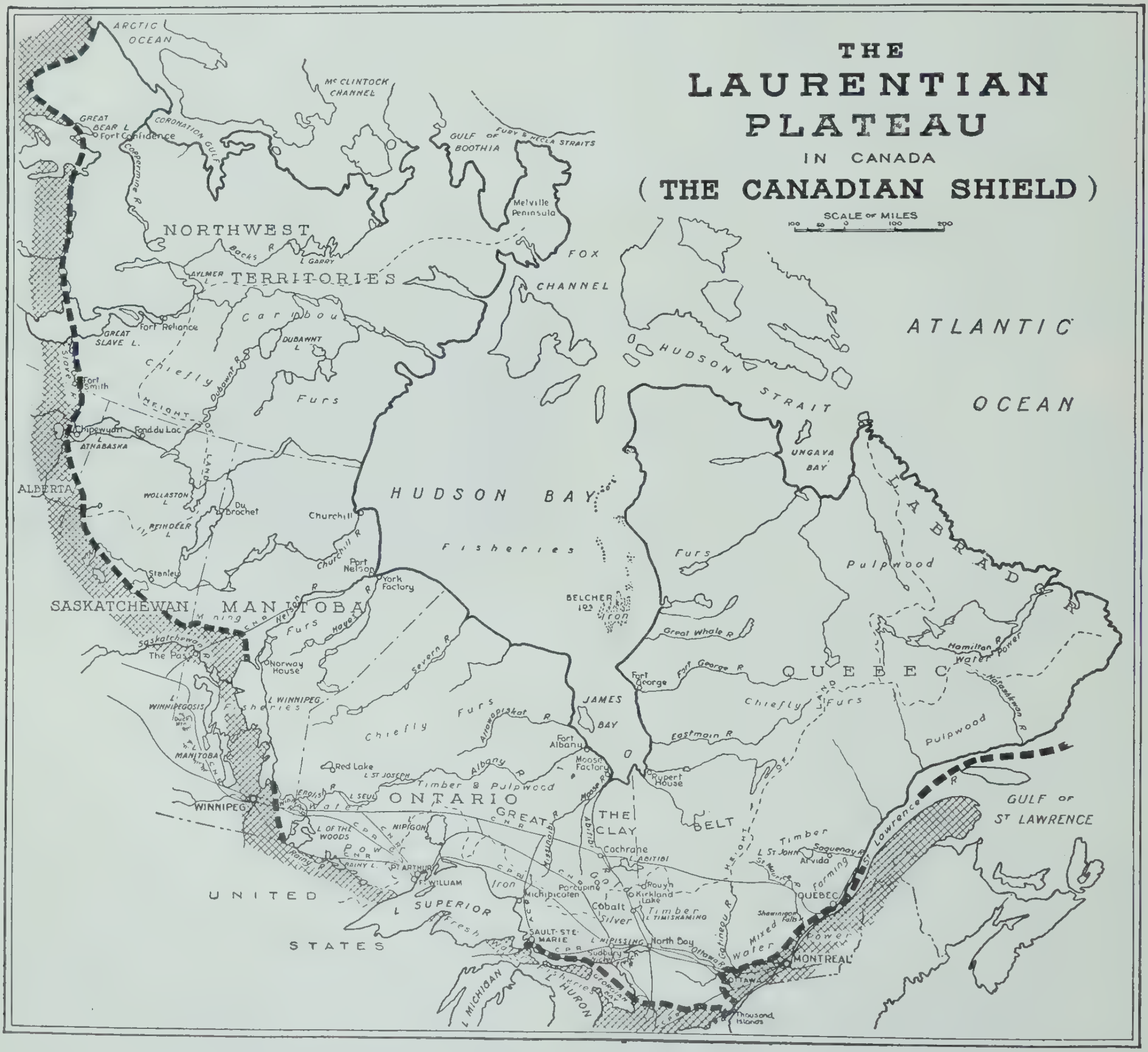
THE LAURENTIAN PLATEAU

Position and Area.—The third natural division of Canada is the Laurentian Plateau, or, as it is sometimes called, the *Canadian Shield*. This region extends northward from the Gulf of St. Lawrence, the Lowlands of the St. Lawrence, Georgian Bay, Lake Huron, and Lake Superior up to the shores of Hudson Strait and the Arctic Ocean, forming a huge horse-shoe of rugged country about Hudson Bay. East of Hudson Bay the Laurentian Plateau extends right to the Atlantic coast. On the west its outer edge is marked by the series of lakes extending north-west—Lake of the Woods, Lake Winnipeg, Lake Athabaska, Great Slave Lake, and Great Bear Lake. The south-western boundary of the Plateau enters United States territory near the Lake of the Woods, then curves around the end of Lake Superior, so that the district just west and south of the lake is within the Laurentian area.

The Dubawnt River near Lake Dubawnt

The southern boundary cuts across Ontario from the south-east shore of Georgian Bay to the Thousand Islands, which are formed by a spur of the plateau which crosses the St. Lawrence and penetrates for a short distance into the United States. From the

Thousand Islands it curves north-west to the Ottawa River not far from the capital of the Dominion, and from there to the north shore of the St. Lawrence River a little east of the city of Quebec. From that point on, the southern margin of the Laurentian Plateau forms the north shore of the St. Lawrence River and the Gulf of St. Lawrence. This plateau is the largest natural division of Canada, being about one-third of the total area of the Dominion.



Hudson Bay.—This immense inland sea, extending to the centre of Canada, is surrounded by the provinces of Quebec, Ontario, and Manitoba and the Northwest Territories. It has its outlet to the Atlantic Ocean through Hudson Strait, and to the Arctic Ocean through *Fox Channel* and *Fury* and *Hecla Straits*. The bay itself is almost square, being 600 miles from north to south and 590 miles from east to west, but, if *James Bay* is included, the distance north and south is almost 900 miles. In area Hudson Bay is one-third as large as the combined provinces of Ontario and Quebec. The depth of water in the bay averages over 400 feet. James Bay, however, is very shallow, so that even small vessels cannot approach the shore. In contrast with the clear and salt water of the bay proper, the water of James Bay is muddy and merely brackish

On the whole, the coasts of both Hudson

and James Bay are low, although there are some high and rocky stretches. Innumerable small islands fringe the coast on the eastern side. There are few good harbors, *Churchill* and *Port Nelson* being the best. A railway from *The Pas* in Manitoba is now under construction to the former port by the Canadian National Railways. The fisheries of the bay are as yet almost untouched, although they are known to be both abundant and valuable.

Hudson Strait is about 450 miles in length, with an average width of 100 miles. The channel is clear throughout, but the shore on both sides is bold and rocky, rising in some places to a height of 2,000 feet. Neither the bay nor the strait freezes over during the winter.

Surface.—The Laurentian Plateau is the oldest part of North America. Long ago it was covered with high mountains, but these were scraped off by glaciers during the ice age and worn down by streams in the thousands of years that have passed since the ice sheets melted, so that now the Plateau, though rough and hilly, is really a plain. Only in the east along the Labrador coast are these elevations of any great height. On its surface are countless lakes; thousands of streams wind over the slopes. Much of the low-lying land is swampy, and peat bogs called *muskegs* are common.

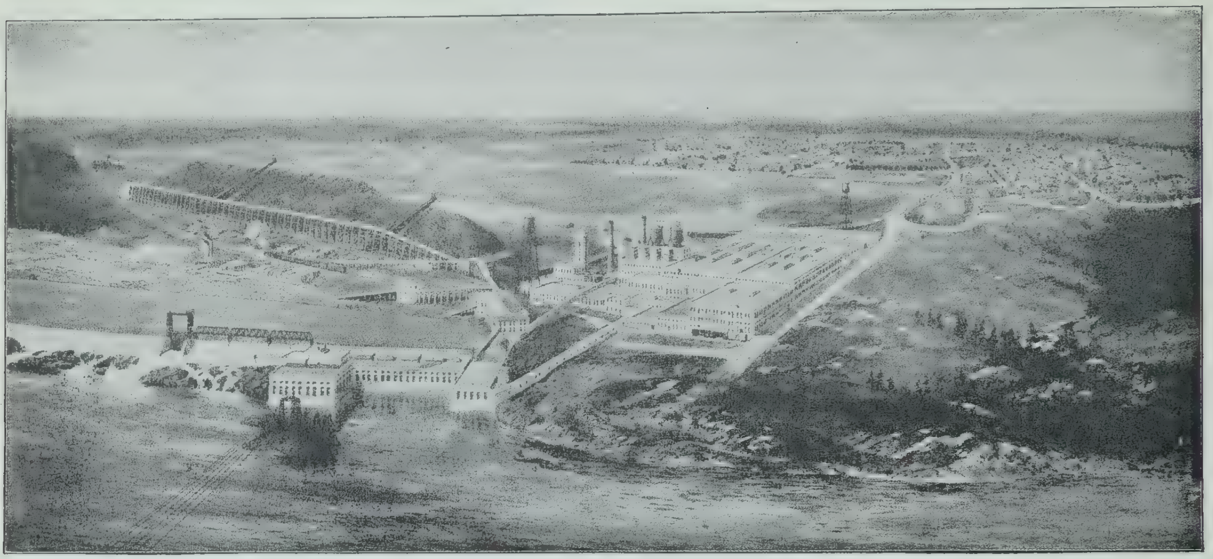
On the higher ground the soil is very shallow at best, and in many places the surface of the land is bare, barren rock. The ancient rocks of the Plateau are exceedingly hard, and so weather very, very slowly. There are, however, a few areas in which a deep clay soil covers the hard rock. The largest of these, known as the *Great Clay Belt*, is south and west of James Bay in Northern Ontario, and extending into Quebec. The Great Clay Belt is the bottom of an old lake, and the deep mantle of clay is the silt deposited there thousands of years ago by the rivers which then flowed into it. There are other smaller scattered areas of deep, good soil, but all told they form only a very small part of the area of the Plateau.

Rivers.—The Plateau has many large and rapid rivers, but most of them are unsuited to navigation. The largest of these is the *Churchill*, a clear and beautiful stream, which flows into Hudson Bay on the west. The river is 1,100 miles in length, but it has many rapids and waterfalls. *Fort Churchill* is at the mouth of the river. The Nelson empties the waters of Lake Winnipeg into Hudson Bay, but it also is much obstructed in its course. Port Nelson lies at its mouth. Just south of the Nelson is the *Hayes River*, navigable for a considerable distance and forming the canoe route between the bay and Lake Winnipeg. At its mouth is *York Factory*. The Severn, a very shallow stream, the *Albany*, and the *Moose* are also important rivers, the latter two emptying into James Bay. The *Hamilton River*, which flows eastward into the Atlantic Ocean, is noted for its magnificent water-powers.

The Harbor of Churchill

Churchill has been decided upon as the terminus of the Hudson Bay Railway.

Flowing southward into the St. Lawrence are the Ottawa and the St. Maurice already noted. The Saguenay, which enters the St. Lawrence to the east of Quebec, lies wholly within the Plateau. It is a dark, gloomy stream, flowing between walls of rock approaching close to the river on either side. The scenery is so magnificent that the trip by steamer attracts thousands of tourists every year. The Saguenay is the outlet for the waters of beautiful *Lake St. John.*



A large Pulp and Paper Mill in Northern Ontario

Climate.—The climate in the northern part of the Laurentian Plateau is severe. The winters are very cold, and the summers, while warm, are short. In the southern areas the summers are warm and long enough to permit hardy crops to mature. The great expanse of water in Hudson Bay and James Bay tempers somewhat the winter climate of the country close by. Thus the winters in the Great Clay Belt of Ontario are not quite so severe as in parts of the Plateau which, although farther south, are too far from James Bay to benefit by its effect upon the winter winds.

Farming.—As has been said, the amount of land suitable for farming is very limited, and over much of the Plateau the climate is so severe that crops cannot mature. The Great Clay Belt is, however, being settled. Over 3,000 farms are in successful operation in this district, and there are still millions of acres of deep, rich soil awaiting the plough. This land is covered with trees—spruce, balsam, and pine—and the settler on these northern farms of Ontario must clear his land before he is able to sow his seed. This is not entirely a disadvantage, for the trees he cuts down may be sold for pulpwood; consequently the settler can support himself during the time in which he is clearing his ground.

Water-Power. — The whole Laurentian Plateau is abundantly supplied with water-power. Almost every river in the whole extent is broken by rapids or waterfalls which may be harnessed for man's use, if needed. As yet, only a few sites have been developed in the southern part of the Plateau in Quebec, Ontario, and Manitoba. Yet the electrical power now developed supplies many pulp and paper mills, many mines, and several cities, such as Montreal, Quebec,

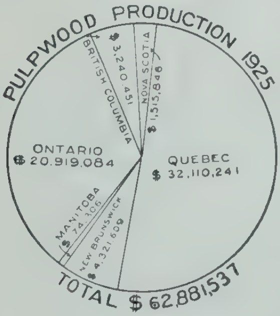
Power Dam on the Winnipeg River
This is one of the power plants that supply electric power to Winnipeg.

Ottawa, *Sault Ste. Marie*, *Fort William*, *Port Arthur*, and *Winnipeg*, with the power they require. Since there is no coal found in the Plateau, and since the cost of transporting it to these northern areas would be very great, the electrical power produced so cheaply is a very great advantage to this part of Canada.

Forest Wealth and Products.—Although the soil of the Plateau is too scanty for farming, it is sufficient in most parts for trees which are able to grow in hollows and crevices of the rocks where even a very little soil has gathered. Except in the far north, where the winters are so cold and long that trees cannot live, the whole Plateau is well forested with spruce, certain varieties of pines, balsam, poplar, and other hardy soft-wood trees. Many of these, especially in the south, are large enough to make into lumber; the greater number of these trees, however, are not good enough for saw-timber, but are suitable for making wood-pulp.

Mill of the Spanish River Pulp and Paper Co., Sault Ste. Marie—built of red Stone

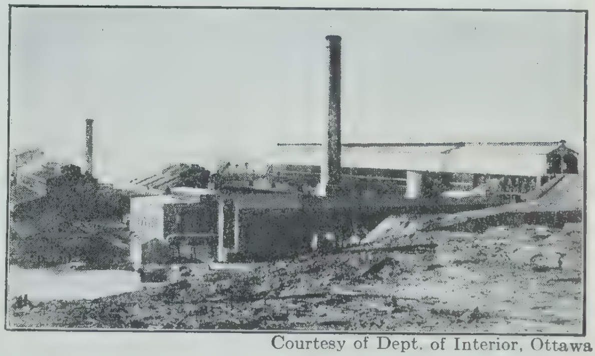
The southern part of this forest is now being cut, and many saw-mills, pulp-mills, and paper-mills are in operation in Ontario, Quebec, and Manitoba. Nearly all the paper made is news-print, and much of it is sold in the United States, as Canadian mills produce far more than Canadian newspapers can use. In fact, two-thirds of the news-print paper used in the United States is either manufactured in Canada or is made from wood or wood-pulp imported from Canada. The Laurentian Plateau in Quebec and Ontario provides by far the greater part of this.



Pulpwood, 1925

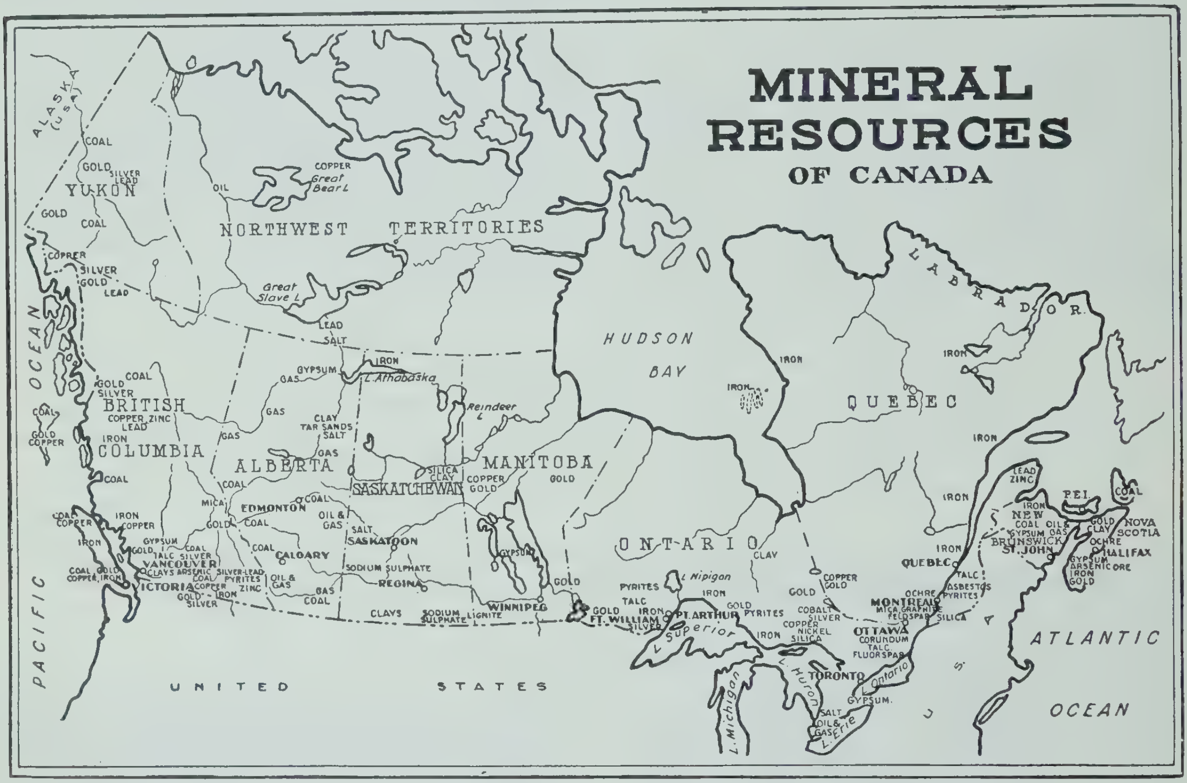
Minerals.—The mineral wealth which is hidden in the rocks of the Laurentian Plateau is known to be enormous, and as yet only a small part of the surface has been thoroughly explored, much less prospected. Nickel, copper, gold, silver, and cobalt are the chief metals now being mined. North of Lake Huron, near *Sudbury*, are large nickel mines. More than three-quarters of the nickel used in the whole world comes from these. Copper is found in the same ore as the nickel, and is an important product of this district. Gold is being mined at *Porcupine* and *Kirkland Lake*, two camps from which the greater part of Canada's gold production is now obtained. Silver and cobalt, a metal used to impart a blue color to glass and pottery, are found at *Cobalt*, on *Lake Timiskaming*. At *Rouyn*, in Quebec, a very large mine is now being developed. In it gold and copper are both found in the same ore. A new and promising gold field has recently been discovered at *Red Lake*, about fifty miles east of the Manitoba boundary

Courtesy of Canadian Pacific Railway
The Town of Cobalt, Ontario


Courtesy of Dept. of Interior, Ottawa
Smelter, International Nickel Co., Copper Cliff

and eighty miles north of the line of the Canadian National Railways. The great *Flin Flon* copper area in Manitoba and Saskatchewan is being developed. A railway into the fields is under construction. In addition to these areas, there are many in which great quantities of ore containing gold, silver, and cobalt are known to occur, but which have not yet been developed.

Iron ores are found in very large deposits at *Michipicoten* and elsewhere along the north shore of Lake Superior. Unfortunately, these iron ores are not high-grade. Eventually, when better methods of treating low-grade ore are found, the deposits in Canada will be of greater value. In addition, the *Belcher Islands* in Hudson Bay are known to contain iron ore, and there are indications of large deposits in the north-western part of Quebec.



Trapping.—The oldest industry of all in the Laurentian Plateau is that of the hunter and trapper. For over 250 years furs in great quantities have been shipped out by the Hudson's Bay Company and other fur-traders. In the central and northern parts of the plateau this is even yet the only occupation of the people. The beaver, the muskrat, the mink, the marten, and the fox are among the chief animals taken. A year's catch in Canada amounts to nearly four and a half million animals, and most of these are caught within the borders of the Laurentian Plateau.

It is improbable that the wide expanse of the Plateau will ever be thickly peopled. It will remain, for the most part, the home of the hunter, the lumberman, and the miner. Yet its contribution to the wealth of Canada is already very large, and undoubtedly will increase many fold in the years to come. With the very probable development of the vast mineral resources which only await discovery, this region may yet prove to be one of the richest in Canada. Instead of forming a barrier between east and west, it may prove to be the great connecting link between Ontario and Quebec on the one hand and the Prairie Provinces on the other.

Helps.—On an outline map trace the outline of the Laurentian Plateau. Note the other great physical regions that it touches and its relation to these. Compare it in size with the Lowlands of the St. Lawrence. Mark the portions of the various provinces included within its limits. On your map fill in the most important lakes and rivers. What is the value of each of these? What is the importance of the Nelson River? What part does the Plateau play in the drainage of Canada? Give a brief description of Hudson Bay. What is the value of this great inland sea to Canada? What are the chief difficulties in connection with the navigation of Hudson Bay and Strait? What is the distance from Port Nelson to Liverpool? Compare with the distance from Montreal. Compare the climate of the Plateau with that of the Lowlands of the St. Lawrence. Why is the Great Clay Belt of such importance?

Why is the water-power of the Plateau of such immense value to Canada? What is the value of the extensive forests of the Plateau? If there were no forests in the Plateau, what would be the effect on Canada? How are the settlers on the Plateau provided with fuel? What would be the effect, if large deposits of coal were discovered? On the mineral map of Canada on page 50 locate the chief mineral areas in the Plateau. What is the value to Canada of each of these minerals? Why is the presence of minerals of such importance? What is the value of the Plateau to the Lowlands of the St. Lawrence and the Great Central Plain? What are the manufactures of this region? Write a brief description of the life of a trapper. Is there any danger of the fur-bearing animals becoming extinct on the Plateau? Why? What means are being taken to conserve (*a*) the animal life? (*b*) the forests? (*c*) the minerals of the Plateau?

THE GREAT CENTRAL PLAIN

Position.—The Great Central Plain of Canada extends westward from the Laurentian Plateau to the Rocky Mountains, and northward from the international boundary to the Arctic Ocean. It is widest along the international boundary, where it stretches for almost 800 miles across nearly the entire breadth of the Prairie Provinces. It narrows in the north, where it forms the valley of the Mackenzie River. Within its limits are the southern parts of Manitoba and Saskatchewan, most of Alberta, and much of the western area of the Northwest Territories.

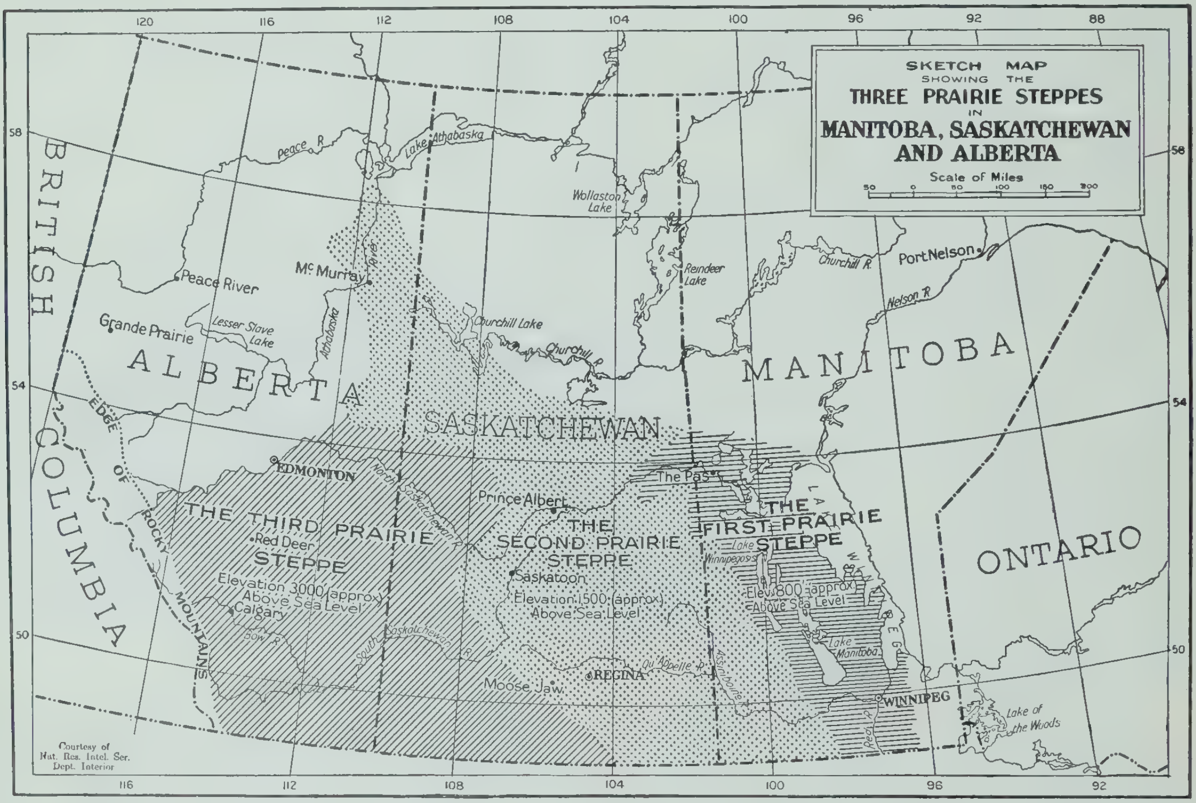
Surface.—South of the *North Saskatchewan River*, the country is divided into three prairie levels or steppes by two lines of hills, which stretch from south-east to north-west. The first or most easterly of these levels is the lowest, with an average elevation of less than 800 feet. It has an average width of 120 miles and an area of 55,000 square miles. The first prairie level includes a large part of Manitoba.

The second or central prairie level is almost twice as large, over twice as wide, and about twice as high as the first. It has an area of 105,000 square miles, a breadth of 250 miles, and an average elevation of 1,600 feet. It is separated from the first level by a line of hills which enter Manitoba from the south under the name of the *Pembina Mountains*. The *Brandon Hills*, *Riding Mountains*, *Duck Mountains*, and the *Porcupine* and *Pasquia Hills* carry the line of separation to the north-west.

Ploughing the Prairie with Horses

The third or most westerly level is by far the largest and highest of the three, being 450 miles wide, 134,000 square miles in area, and having an elevation increasing from 2,000 feet in the east to over 4,000 feet at the foothills of the Rockies. The central level is separated from the western level by a series of hills similar to those forming the eastern boundary of the central level. They begin in the *Missouri Coteau*, and continue northward through the *Eagle Hills* to a point some distance west of Lake Athabaska.

The first prairie level coincides, roughly speaking, with the valley of the Red River. The surface of this area is nearly everywhere uniformly level and unbroken, with shallow river valleys. The second prairie level is not so uniform. The rivers crossing it have cut deeper and wider valleys, in some places bordered by hills 200 to 300 feet high. There are also scattered hills over the whole area, and the land is rolling and not so uniformly level as it is in the first steppe. In the third level, these features become more evident. The prairie is still more rolling, the river channels are still deeper, and the hills more frequent.



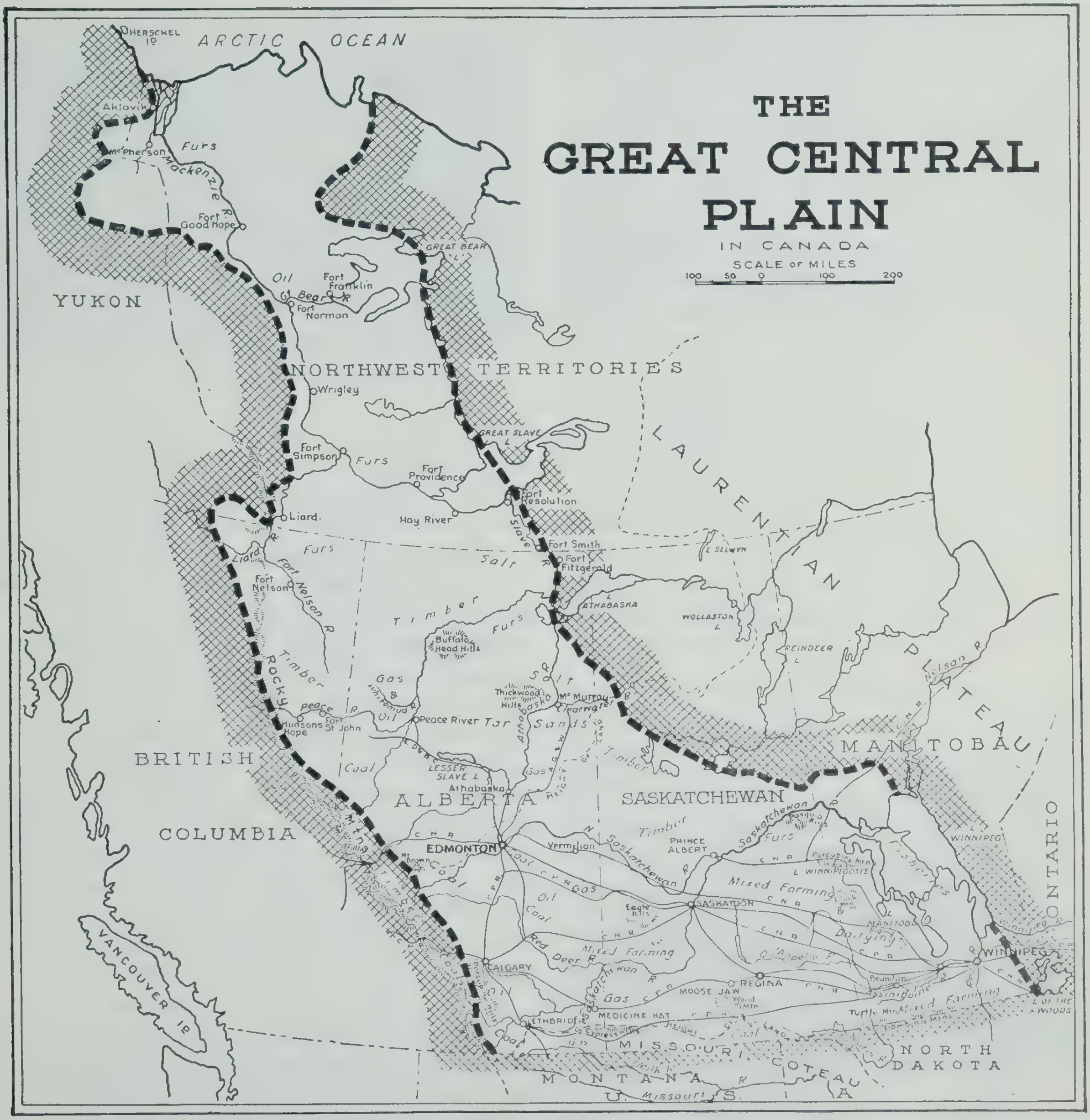
In addition to the hills already named as forming part of the boundaries between the prairie levels, the following elevations should be noted. In the south-western part of Manitoba are found the *Turtle Mountains*. The Riding, Duck, and Turtle Mountains are forested, and the Dominion Government has made them into forest reserves to conserve the supply of timber available within Manitoba. *Wood Mountain* and the *Cypress Hills* in Southern Saskatchewan mark the northern limit of the narrow strip of country lying within Canada which is drained southward into the *Missouri River*.

Drainage.—When considering the drainage of the Great Plains, we must also observe that of the adjoining areas of the Laurentian Plateau, as the slopes which determine the courses of the rivers cover both of these regions. The eastern slopes of the Rockies must also be considered. *See page 42.*

That portion of Canada lying between Hudson Bay and Ontario on the east and the Rocky Mountains on the west falls into two large drainage slopes and one small one, separated from one another by two elevations of land. The more northerly of these elevations extends in a general north-east direction from a point in the foothills of the Rockies near *Mount Brown* to a point between *Reindeer Lake* and *Wollaston Lake* in Northern

Saskatchewan. There the elevation turns to the north-west, passing to the east of *Selwyn Lake* and Great Slave Lake. Turning again eastward, it follows the southern edge of the valley of the *Back River* to Melville Peninsula.

The most southerly height of land begins at the point where the international boundary intersects the Rocky Mountains, curves northward into Alberta for a short distance, and runs roughly parallel to the international boundary at a distance of thirty to fifty miles. In Saskatchewan it turns to the south, leaving Canadian territory almost at the point where the province of Saskatchewan and the states of *Montana* and *North Dakota* meet.

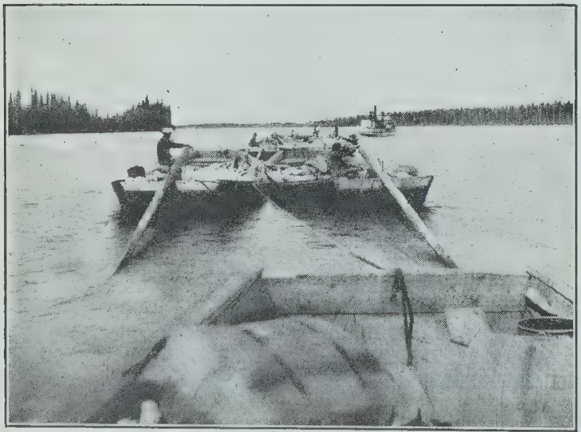


The vast triangle of land lying between the northern watershed, the Rocky Mountains, and the Arctic Ocean has a northerly slope, and its rivers all empty into the Arctic Ocean. The chief river system is that of the Mackenzie River, which flows through the middle of the northern part of the Central Plain. Into it is poured the drainage of

Northern Alberta, Northern Saskatchewan, and a great part of the Northwest Territories.

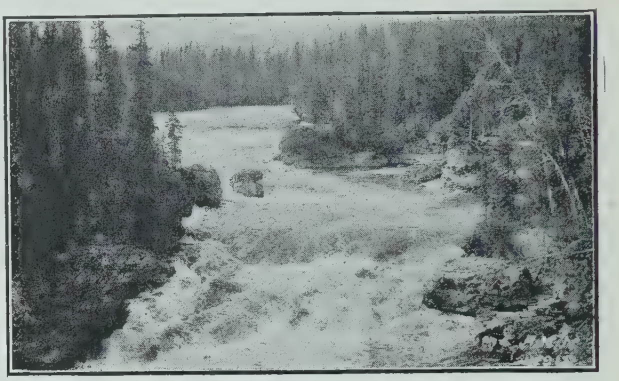
The *Athabaska River* is generally considered, on account of the direction of its course, as the upper Mackenzie. Rising in the Rockies, it flows in a north-easterly direction until it reaches *Athabaska*, where it turns towards the north and empties into Lake Athabaska. Throughout its entire 776 miles it flows through a deep valley. Lake Athabaska is less than half the size of Lake Ontario, with a length of almost 200 miles. Its breadth varies from five to thirty-five miles. Flowing into *Slave River* from the west is the Peace River, which rises in the Cordillera. The river, from the headwaters of its chief tributary to its mouth, is 905 miles in length. In its upper reaches it flows through a broad and deep valley, which gradually disappears as the lake is approached. Both the Athabaska and the Peace are navigable for long stretches; Lake Athabaska is navigable over its whole extent.

The Slave River empties Lake Athabaska into Great Slave Lake. Midway on the river is *Fort Smith*, the head of navigation from the sea. Great Slave Lake is about the same size as Lake Erie. It is long and narrow, indented with bays, and with very clear and deep water. The ice remains in the lake until about the first of July.


Courtesy of Dept. of Interior, Ottawa

Towing Traders' Boats down the Peace River

From the western end of Great Slave Lake the Mackenzie flows in a broad, clear stream on its way to the Arctic. The most important tributary on the west is the *Liard*, which rises close to the source of the Yukon. It is a very dangerous river on account of numerous rapids, but is navigable for considerable distances. On the east the *Great Bear River* drains Great Bear Lake into the Mackenzie. The lake is somewhat larger than Lake Erie, with a length of 175 miles. In shape it is very irregular. It is open for about three months in the year.


Falls on the Clearwater River, Northern Alberta

The Mackenzie has a length of about 1,200 miles and an average breadth of over a mile. It is an immense river. Its course, heavily wooded on both sides, is sometimes between lowlands, sometimes between mountain ranges. Just before it reaches the Arctic Circle, it narrows to half a mile in width and flows for seven miles through a rocky canyon 150 feet in height. This striking section is known as the *Ramparts*. At its mouth the river spreads out into a broad delta and enters the Arctic through many mouths. Eighty miles from the delta is *Herschel Island*, the best harbor on the Arctic coast.

The most important section of the Mackenzie River Basin lies along the upper Peace River. Although north of the fifty-fifth parallel, the land in this district is so fertile and the climate so moderate that it is fast becoming one of the most prosperous farming areas in all the Canadian West.

Between the two watersheds lies another huge triangle of land, with its apex resting upon the Rocky Mountains in Southern Alberta, and its base extending along the shore of Hudson Bay. In general, the slope of this area is towards the north-east, and its rivers finally pour their waters into Hudson Bay. Lake Winnipeg is the drainage centre for this territory, receiving the waters of the Saskatchewan River from the west and the Red River from the south. The Nelson River provides an outlet from Lake Winnipeg to Hudson Bay.

The Saskatchewan is a noble river. Its two branches, the North Saskatchewan and the *South Saskatchewan*, unite near Prince Albert. The source of both branches is in the Rockies, and during the spring and summer the melting snows of the mountains supply them with a large volume of water. From its source to its mouth at Lake Winnipeg, the river flows 1,200 miles across the three Prairie Provinces. The Red River rises not far from the headwaters of the Mississippi and flows northward until it reaches Lake Winnipeg. Only about a hundred miles of its course is in Canadian territory. Its chief tributary is the *Assiniboine*. Lake Winnipeg has a length of 260 miles, with a breadth varying from five to sixty-five miles. It is slightly smaller than Lake Erie. Owing to the shallowness of the lake, the storms which sweep over its surface are very dangerous to navigation. Through the *Winnipeg River* the waters of the Lake of the Woods are emptied into Lake Winnipeg and thence find their way to the ocean.

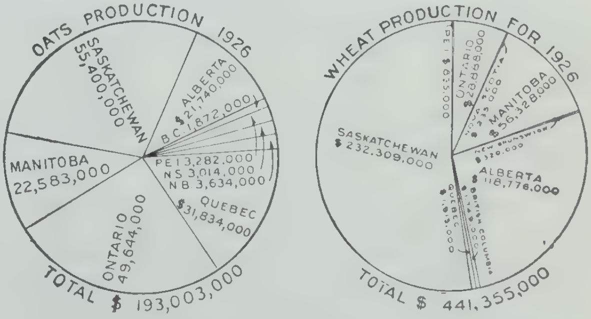
The narrow strip of Canadian territory in Alberta and Saskatchewan situated between the southern watershed and the international boundary is drained by the *Milk River* and the *Frenchman River* into the Missouri. This small district is, therefore, a part of the Mississippi Basin.

Climate.—The climate of the Great Central Plain is in general extreme, owing to its northerly situation and to its distance from the moderating effect of the ocean. The winters are cold, the summers hot. The rainfall is considerably less than that of the other natural divisions of the Dominion, but is enough for the needs of crops. The rains come chiefly in June and July, when the growing crops need them most. In a few areas the rainfall is too small for successful farming unless assisted by irrigation.

The outstanding feature of the climate of the southern portion of the Great Plain is the *Chinook wind* which affects the climate of Southern Alberta and South-western Saskatchewan. This term is used of the warm, dry winds which come down over the eastern slopes of the Rocky Mountains. The effects of the Chinook are startling. It brings April weather into mid-winter, and may remove a heavy covering of snow in a few hours. It uncovers the grass, and so stock may be run out of doors the year round. Though these areas have a fall of snow and rain about equal to that in other parts of the plain, the Chinooks absorb so much moisture that either dry farming or irrigation is necessary in the districts which they influence most.

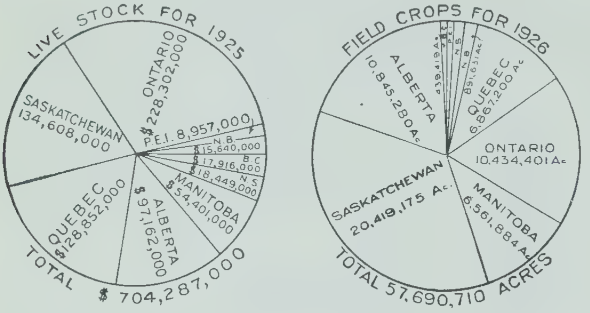
A Fur-trader's Home, Edmonton District, Alberta

Farming.—The southern portion of the Great Central Plain consists of treeless grasslands or *prairies*. The prairies extend northward from the international boundary to a

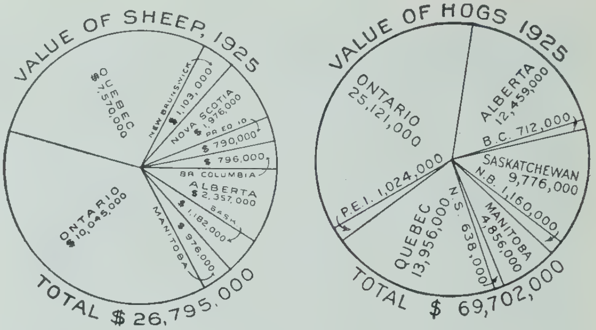


Value of Oat and Wheat Production, 1926

distance varying from 50 miles in Manitoba to 245 miles in Western Saskatchewan and Eastern Alberta. The prairies are the finest wheat-growing lands in the world. The soil rich in nitrates, the long hours of hot sunshine in July and August, the gentle rains of May, June, and early July, the dry weather of late July and August, are exactly the conditions needed for the production of hard wheat of the finest quality. All other hardy cereals, such as oats, barley, flax, and rye, grow equally well. The grain fields of the prairies are one of the great granaries of the world.

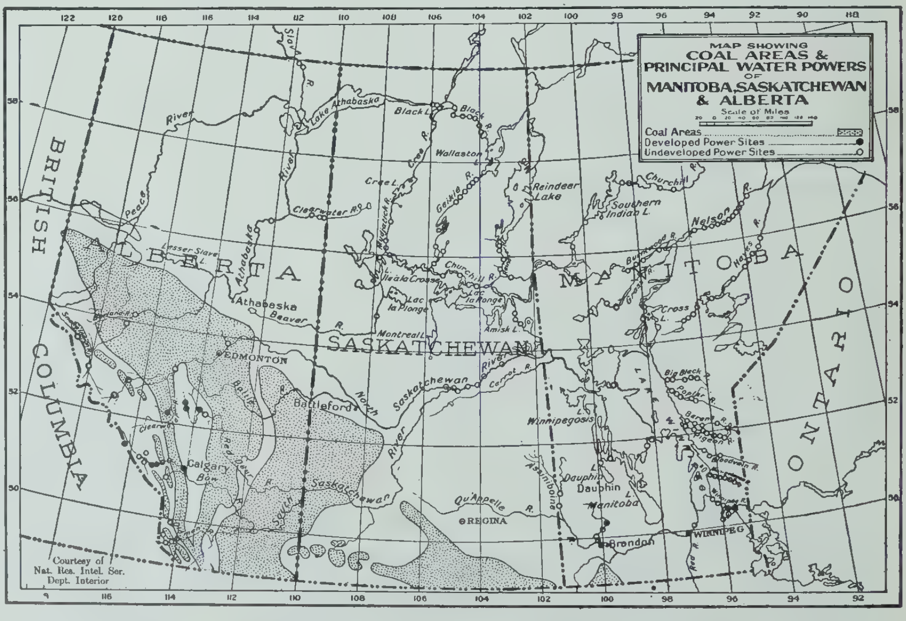


Value of Live Stock, 1925; and Field Crops, 1926



Value of Sheep and Hogs, 1925

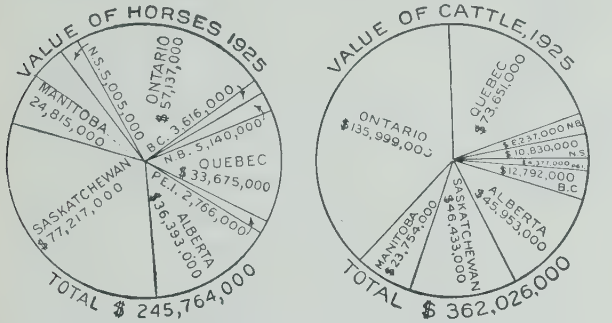
Perhaps the most striking feature of the prairie section is the number of elevators found at almost every railway station and siding. The grain when threshed is brought to these elevators and is there stored until cars are ready for its shipment. At the stations, also, loading platforms are provided from which the grain can be loaded directly into the cars. Until lately, practically all the grain grown in the Prairie Provinces was shipped to the markets of the world by way of Port Arthur and Fort William, at the head of Lake Superior. Now, however, a considerable part of the grain from Alberta is shipped to Vancouver, whence it is sent to the European markets by way of the *Panama Canal.*



A great deal of the land in Southern Alberta and in the western part of Southern Saskatchewan is devoted to ranching. In these districts the winters are generally so mild that cattle and horses can live in the open all the year. In the past the cattle were allowed to find their own feed on the dead prairie grass, but at present most of the ranchers put up hay for the winter's need. In Southern Alberta, farming is greatly assisted by irrigation, the rainfall being uncertain, and the summer heat and parching wind sometimes very injurious to growing grain.

North of the prairies as far as the North Saskatchewan River the surface of the plains is a beautiful park-like country, in which clumps of trees dot the landscape. In this area also the soil is very fertile. The farms of the "park country" are devoted mainly to mixed farming and stock-raising.

North of the North Saskatchewan River the land is much more thickly wooded, although there are many tracts of prairie land within the forest regions. As yet this region is not settled, except in a few favored districts, such as the Peace River Valley, which is fairly open grass-land.



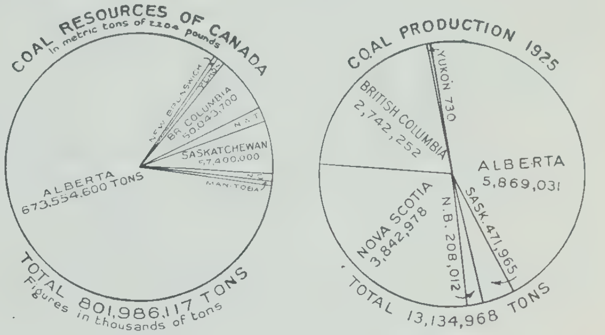
Value of Horses and Cattle, 1925

Mineral Wealth.—The only mineral of importance occurring in the Great Central Plain is coal. This is found in all three Prairie Provinces. The coal of Manitoba and Saskatchewan, known as lignite, is of poor quality and is not mined to any great extent. In Alberta, however, the coal is of good grade, and is found in enormous quantities. Fourteen per cent of the known supply of coal in the world underlies the soil of that province. There are more than 330 mines in operation in Alberta. From them more coal is taken than from the mines of any other section of the Dominion. They supply the three Prairie Provinces with this essential mineral, except for the small amount produced in Saskatchewan. *See map on page 56.*

Courtesy of Dept of Interior Ottawa

Coal Mining in Alberta

In Central and Southern Alberta natural gas is found in amazing quantities. The cities and towns of these parts of Alberta are supplied with it very cheaply, and use it freely for heat, light, and power.



Coal Resources and Production, 1925

A thorough search for oil—a commodity in which Canada is poor—is now being made. Promising fields have already been located at *Turner Valley*, near Calgary, and at Wainwright, and the prospects for the discovery of new fields are bright.

Other Industries.—Lumbering along the southern margin of the forest area of the Central Plain is a growing industry. Much of the forest area is covered with trees suitable for making pulp, and, while not being used at present, is a valuable reserve of this material. Fishing is carried on in some of the lakes, and will grow in importance as the population of the Plain increases. In the north, trapping is still the chief occupation of the scattered inhabitants. From the Mackenzie River Basin comes a large part of Canada's total catch of furs. Although the settlers on the Plain are mainly farmers, manufacturing is making rapid progress, particularly in the production of food products. Manitoba now ranks as the fourth manufacturing province in the Dominion.

A study of the map on page 56 will show that, either on the Plain itself or in the adjoining physical regions, there is a great deal of valuable water-power available for manufacturing purposes in the Prairie Provinces. With cheap power in general use the manufactures of the Plain should show a steady increase.

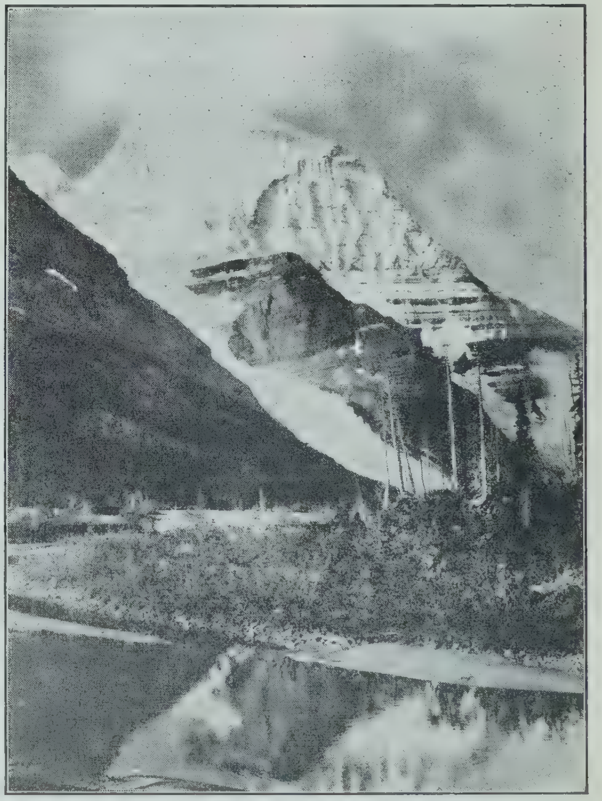
Helps.—Trace on an outline map the Great Central Plain. Note its relationship to the Great Central plain of the United States. Locate it in relation to the Laurentian Plateau and the Canadian Cordillera. What provinces does it include, in whole or in part? Mark the outlines of the three prairie levels. Trace the boundaries of these levels. Compare their surfaces. What effect has the elevation of each on the products? On the map on page 42 note the watersheds and follow the courses of the rivers of the Plain. Into what three drainage slopes does the country naturally fall? Describe briefly (*a*) the Mackenzie; (*b*) the Saskatchewan; (*c*) the Red. What is the commercial importance of each? Describe Lakes Athabaska, Great Bear, and Great Slave. What is the value of each? What is the commercial importance of Lake Winnipeg? Compare the climate of the Plain with that of the Lowlands of the St. Lawrence. Compare the rainfall. Write a brief description of the Chinook winds. Are they harmful or beneficial to the country affected? Why?

From your knowledge of the surface and climate of the Plain, what would you take to be the chief occupation of the people? Why? What parts of the Plain are best suited to ranching? Why? Describe the elevator system. How far is mixed farming carried on in the Plain? Compare in this respect with the Lowlands of the St. Lawrence. By what routes does the grain of the prairies reach the European markets? Trace these on your map. What is the advantage to Alberta of the route by way of the Panama Canal? Compare the Plain with the Appalachian Region as to coal resources. What are the commercial advantages of the presence of oil and natural gas? If coal from Alberta could be cheaply carried to Ontario what would be the benefit (*a*) to Alberta? (*b*) to Ontario? What is the importance of fishing, lumbering, and trapping in the Plain? Why are there not more manufactures at present in the Great Central Plain? How are the manufactures there related to the natural resources?

THE CANADIAN CORDILLERA

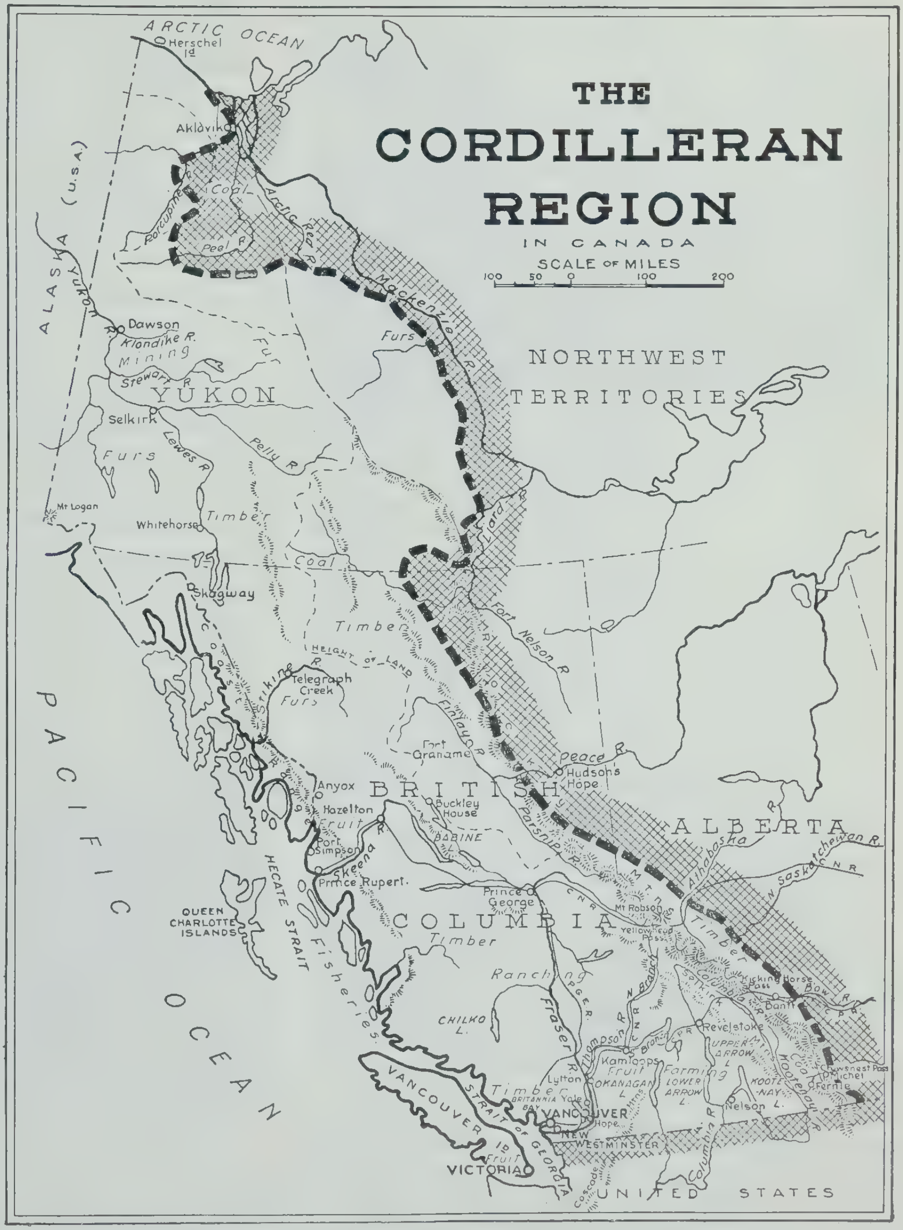
Position and Extent.—The Canadian Cordillera is the most westerly of the great natural physical divisions of Canada. It extends from the international boundary on the south to the Arctic Ocean on the north, and from the eastern foothills of the Rockies on the east to the Pacific Ocean on the west.

Surface.—The Cordillera is composed of a series of great mountain ranges, running from north to south, with valleys and plateaus between the ranges. In the east are the Rocky Mountains, a range averaging sixty miles in width. In the range are many lofty peaks, such as *Mount Robson*, which towers to a height of over two and a half miles above sea-level. To the west of the Rockies rise the Selkirks, which are not so high, on the average, as the Rockies. Between the Selkirks and the Coast Range is the *Interior Plateau* stretching for 500 miles northward from the international boundary. Paralleling



Mount Robson, Robson Park, British Columbia the coast of the mainland of British Columbia is another range which has been partially submerged. Vancouver Island, the *Queen Charlotte Islands*, and the thousands of smaller isles which fringe the coast are the projecting peaks of this western undersea range.

The mountain ranges of the Cordillera, more particularly the Rockies and the Selkirks, present to the traveller an endless variety of scenery, which ranks with the finest in the world. The mountains themselves are unspeakably grand. There is no monotony in them, for the jagged outlines of the huge masses of rock flung high against the sky are ever different, ever changing, as the traveller journeys on. There is endless variety, too, in the narrow canyons, in which, far beneath, the mountain torrents rush headlong to the distant sea, and in the green valleys and grassy meadows nestling at the base of the frowning mountains. To them the eye turns with relief when wearied with the vain attempt to grasp the gigantic proportions of the mountains.



There is a feast of color everywhere; the dark gray of soaring pinnacles of bare rock; the dazzling white of the eternal snow; the brilliant green of grassy plots, and the deeper hue of the forest trees; the white foam of turbulent streams; the glint of mountain lakes; the blazing patches of vivid red, purple, and yellow which splotch the canyon walls. The mountains never grow wearisome to the traveller; not in a whole lifetime could he discover all their beauty or cease to be awed by their stately grandeur.

Drainage.—The watershed of the Rockies divides the headwaters of the streams flowing westward to the Pacific from those flowing eastward into the Great Central Plain. Upon the eastern slope rise the Saskatchewan, the Athabaska, the Peace, and the Liard. The waters of the last three eventually reach the Arctic Ocean through the Mackenzie River.

More important, however, so far as the Cordillera is concerned, are the rivers of the western slope. In the far north is the Yukon River, flowing across the Yukon Territory into Alaska, and eventually emptying into *Bering Sea.* The Canadian part of this river is important, for by it easy access is had to *Dawson,* the chief town of this district, and the centre of the famous Klondike gold fields. River-boats ply on the Yukon between *Whitehorse,* which is connected with *Skagway,* Alaska, by railway, and Dawson. The *Stikine* offers the best route from the Pacific Coast into the wilds of Northern British Columbia. It is navigable for steamers for about half its total length. The *Skeena,* further to the south, is more important. It is navigable for small steamers as far as *Hazelton,* 180 miles from its mouth. The lower part of the valley of the Skeena forms the route of the northern transcontinental line of the Canadian National Railways.

Courtesy of Canadian National Railways

The Junction of the Bulkley and Skeena Rivers at Hazelton, British Columbia

The Skeena is one of the best salmon streams of the west coast.

In the southern part of British Columbia are two great rivers—the Columbia and the Fraser. The Columbia and its chief tributary, the *Kootenay,* wind in most erratic curves through the valleys west of the Rockies, then, united, flow southward across the international boundary. The *Arrow Lakes* and *Kootenay Lake,* which are in the Columbia Basin, are valuable in navigation.

The Fraser is the most important river of the Cordillera. Its tributaries drain all the interior valleys of the southern half of the province, save only the small south-eastern portion drained by the Columbia. The Fraser rises on the western slope of *Yellowhead Pass,* flows at first to the north-west for 150 miles, then turns abruptly south, and flows for some 400 miles down and across the interior Plateau. At *Hope* it turns again sharply to the west, reaching the *Strait of Georgia* at New Westminster. In its upper reaches the Fraser is a wild mountain stream. Where it has burst through the Coast Ranges, it has cut an enormous canyon, through which the waters of the river rush swirling and foaming. The lower reaches of the river are navigable for a distance of 80 miles from *Yale* to the sea. The southern line of the Canadian National Railways and the main line of the Canadian Pacific follow the valley of the Fraser from *Lytton* to the coast.

Climate.—The climate of the Cordillera varies much in different areas. Along the coast the climate is moist and balmy, due to the moisture-laden, warm winds blowing from the Pacific Ocean. As these winds strike the mountain ranges and are cooled, heavy rainfall results. This is very great on the western slopes of the Coast Range, not so heavy upon the western slopes of the Selkirks, and still less upon the western slopes of the Rockies. The eastern slopes of the mountains and the districts lying in their

Orchards in Southern British Columbia

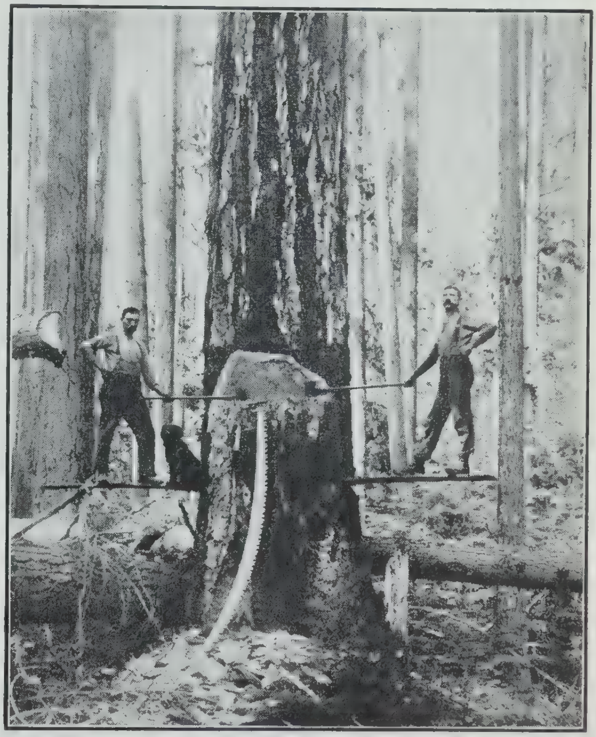
lee are much drier. In the interior, too, the ocean winds do not affect the temperature so much, and there cold winters are the rule.

Agriculture.—Although the Cordillera is so mountainous, there are many districts in the valleys where farming is carried on. The southern valleys are famous for their splendid fruit, although in some of them the rainfall is so little that the crops must be irrigated. Wheat, barley, and oats are also grown. In many places the land is suitable for ranching, as in the districts about Yale and *Kamloops*. But the agricultural production of the Cordillera is and will remain small compared with that of the Plain Region or of the Lowlands of the St. Lawrence.

Forest Wealth.—The western slopes of the mountain ranges of the Cordillera are clothed with magnificent forests. The trees grow to great size, especially in the coastal region, where the mild climate and very heavy rainfall cause rapid growth. By far the greater part of the total timber in Canada suitable for making lumber is within this region. The Douglas fir is the most valuable tree of the Pacific coast. It grows to an enormous size, often reaching a height of 300 feet and a diameter of ten to twelve feet. The trunk of this tree is clear of branches for 150 to 200 feet from the ground. It supplies material suitable both for finely finished interior wood-work and also for structural timber.

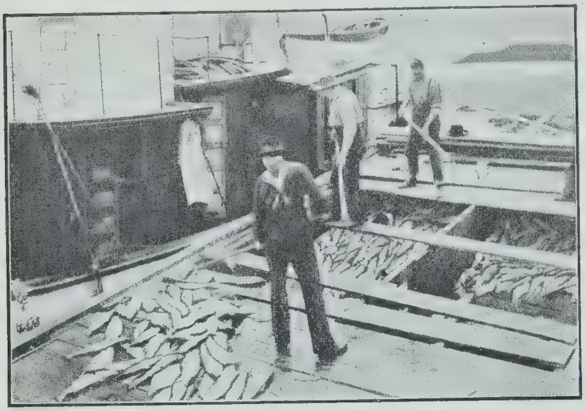
The British Columbia cedar grows to even greater size than the Douglas fir, in some cases reaching a diameter of eighteen to twenty feet. Its wood is used partly for fine dressed lumber, but mainly for making shingles. The wood of the cedar is beautifully grained and very durable. Hemlock, spruce, and pine are other useful trees found in this region. Of late years the pulp and paper industry has developed rapidly, and much hemlock and spruce are now being cut and used for this purpose. Since there is an abundance of water-power available, as well as a great supply of the necessary raw material, this branch of the forest industry will probably grow very quickly.

Mining.—The mineral resources of the Cordillera are very large. Coal is mined on Vancouver Island, in the *Crowsnest Pass*, and in the foothills of the Rockies in Alberta. Much of the product of the mines is used by ocean steamships, much by the railways, and a good deal is exported to the United States. Gold, in greater or smaller amounts, has been found in the beds of all the streams of the interior ranges, and much has been taken from the sands of the Fraser, the *Thompson*, and other rivers. Such gold, occurring in sand and gravel in the form of gold dust or small nuggets, is called *placer gold*. In the mountain rock are also many veins containing gold, and most of the gold produced in the Cordillera is now obtained by mining, crushing, and treating ore. Copper, lead, zinc, and silver are other very valuable mineral products of this part of the Dominion. At *Britannia Bay* and *Anyox* are huge copper smelting plants. The latter plant is now producing upwards of 15,000 tons of copper a year.



Undercutting a Douglas Fir, British Columbia

Fishing.—The Pacific coast fisheries of Canada are among the most valuable in the world. In fact, the total value of their product is greater than that of the Atlantic fisheries. The salmon is the most valuable of the fish taken. The salmon, although a sea-fish, comes into the rivers to spawn. The salmon-fishers take advantage of this, and trap and net the fish while on their way up the rivers. The Skeena and Fraser Rivers are the centres of the salmon-fishing. A small part of the catch is sold fresh, but by far the greater part is canned and sold in that form all over the world.



Unloading Salmon, British Columbia
The salmon average about six pounds in weight.

Prince Rupert is the centre for deep-sea fishing. Halibut and herring form the bulk of the catch. From Prince Rupert the halibut is shipped in ice to all parts of Canada and to many of the cities of the United States.

Manufacturing.—The Cordillera ranks in manufacturing importance next to the St. Lawrence Lowlands and the Appalachian Region. The manufactures are closely connected with the natural resources. Lumber is manufactured in all its forms, and pulp and paper production is steadily increasing. Large smelters are operated in the mining districts. Coke is manufactured at *Michel*, in the Crowsnest Pass. Salmon-canning is, of course, one of the largest industries. Both Victoria and Vancouver have well-equipped ship-building yards.

Helps.—Trace on an outline map the Canadian Cordillera. Show its relationship to the Cordillera in the United States. In what relation does it stand to the Great Central Plain? What advantages does it derive from its long and indented coast-line? What are the commercial advantages of its situation on the Pacific Coast? Describe briefly the surface of the Cordillera. On your map mark the mountain ranges and the drainage basins. Locate the chief rivers and describe each briefly. What is the commercial importance of (*a*) the Fraser? (*b*) the Columbia? (*c*) the Skeena? Describe briefly the climate. What are the advantages and disadvantages of the numerous mountain ranges? Compare it with that of the Appalachian Region; with that of the Great Central Plain.

Compare the Cordillera with the Great Central Plain as a grain-growing and ranching region. Compare it with the Lowlands of the St. Lawrence as a fruit-growing region. Compare it with the Laurentian Plateau as a lumbering region. Compare it with the Appalachian Region as a fishing region. What is the importance of mining in the Cordillera? Compare its natural resources with those of the other great physical regions. Why should the Cordillera be a great manufacturing region? Show how the manufactures are closely connected with the natural resources.

TRANSPORTATION

There are two great railway systems in Canada—the *Canadian National Railways* and the *Canadian Pacific Railway.* These are two of the largest railway systems in the world.

The Canadian National Railways are operated by the Canadian government. They include the *Intercolonial Railway* from Sydney, Halifax, and St. John to Montreal, serving the local traffic of the Maritime Provinces and part of Quebec; the *Transcontinental* from Moncton to Winnipeg, which crosses on its way the undeveloped districts of Northern Quebec and Ontario; the *Canadian Northern*, extending from Quebec, Montreal, and Toronto to Vancouver, with local lines on Vancouver Island and lines radiating throughout Quebec and Eastern Ontario, as well as numerous branch lines serving the great wheat-producing sections of the Prairie Provinces; the *Grand Trunk Pacific*, which continues the Transcontinental from Winnipeg to Prince Rupert on the Pacific Coast; and the *Grand Trunk*, the main line of which runs from *Portland*, Maine, to *Chicago, Illinois*, passing through the most densely settled and fertile parts of Quebec and Ontario. Its branch lines form a perfect network of railways, especially in Southern Ontario. The total length of the Canadian National Railways in Canada is 20,779 miles.

The Canadian Pacific spans the continent from St. John, New Brunswick, to Vancouver, British Columbia. Its main line, 3,387 miles long, affords an unbroken route from ocean to ocean. The many branch lines which tap the cities and towns and farming districts, along with the lines which it controls in the United States, bring up the total length of the Canadian Pacific lines to 15,571 miles.

From the Atlantic to the Pacific are frequent points of connection with the United States. In addition to the two great Canadian systems there are a number of local railways, built, for the most part, to open up and develop new districts. Thus, for instance, the *Alberta and Great Waterways Railway*, running from *Edmonton* to *Waterways*, is a great help in the colonizing of Northern Alberta. So, too, the *Timiskaming and Northern Ontario Railway* is of great value in opening up the Great Clay Belt of Ontario for settlement.

There are many short suburban electric roads in Canada, which serve to bring surrounding rural districts into closer touch with urban centres. Of the 2,500 miles of electric railways now in operation in Canada, a large percentage is suburban. The development of the water-power of the Dominion has had much to do with the advance of electric railways.

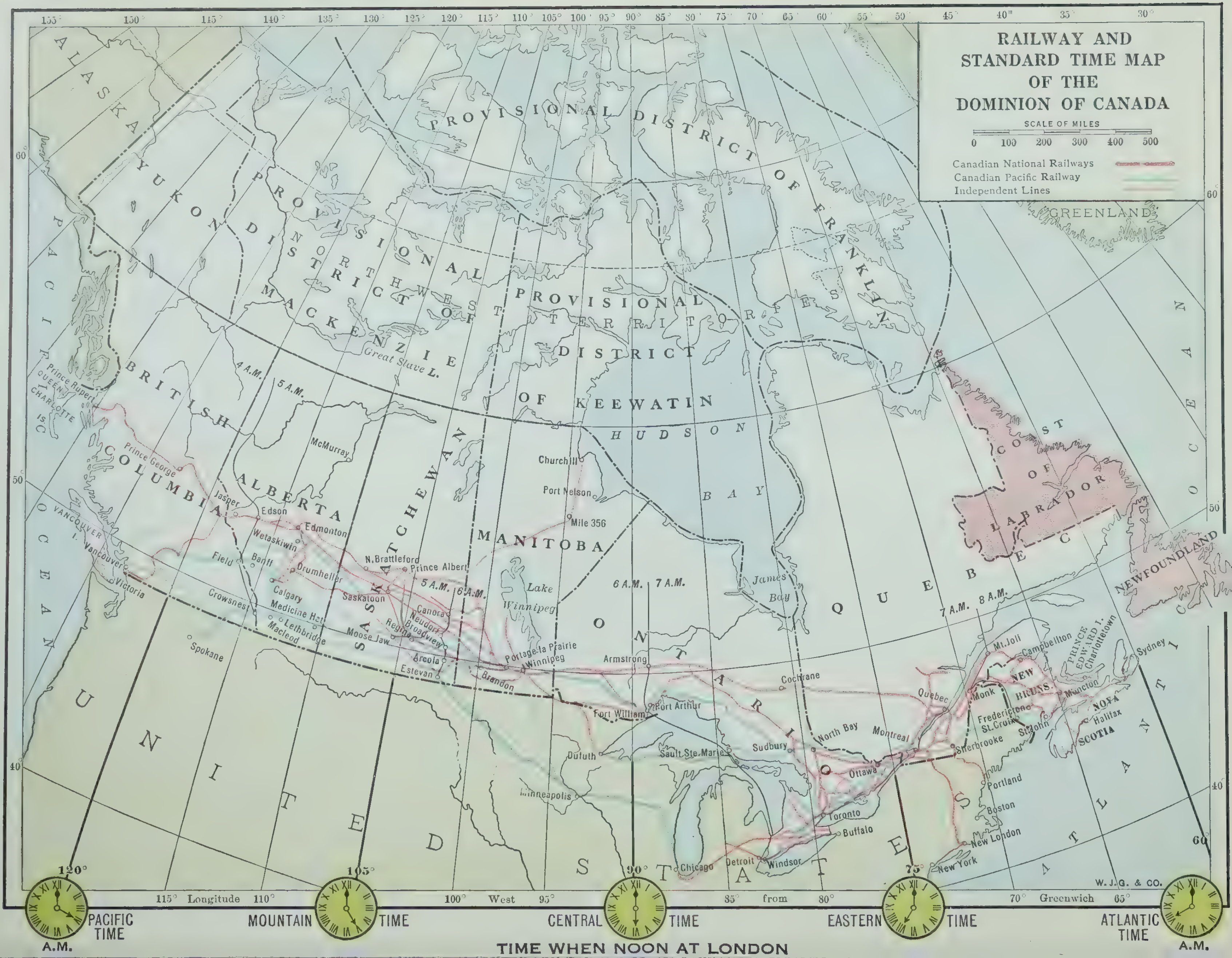
In recent years the great increase in motor transportation has greatly encouraged the building of good roads. Every province of Canada has recognized the need of providing highways suitable for motor traffic. Ontario and Quebec, in particular, have expended great sums in this most useful work.

The internal waterways of Canada and their great usefulness have already been discussed. The facilities for ocean shipping are equally good. Canada is blessed with good harbors on both the east and west coasts. Halifax, St. John, and Sydney, on the Atlantic, Quebec and Montreal, on the St. Lawrence, and Victoria, Vancouver, and Prince Rupert, on the Pacific, are unsurpassed as havens. They all have direct railway communication with the interior of Canada, so that the products of the farms, the forests, the mines, and the mills can be readily shipped to any part in the world. The Canadian ports on the Atlantic have a decided advantage over those of the United States. For example, it is but 2,485 miles from Halifax to *Liverpool*, while from New York to Liverpool is 3,010 miles.

The Harbor of Victoria, British Columbia

A rapid and efficient passenger and freight service is maintained between the Atlantic ports and Europe by several lines of steamers. Other steamers run to various Newfoundland, United States, West Indian, and South American ports. From the Pacific ports there is direct communication with Australia, New Zealand, China, *Japan*, and *India*, as well as with Europe through the Panama Canal. The Canadian Government Merchant Marine, operated by the Canadian National Railways, runs steamers to the West Indies, South America, Europe, Mexico, Australia, and the countries of the Far East.

RAILWAY AND STANDARD TIME MAP OF THE DOMINION OF CANADA

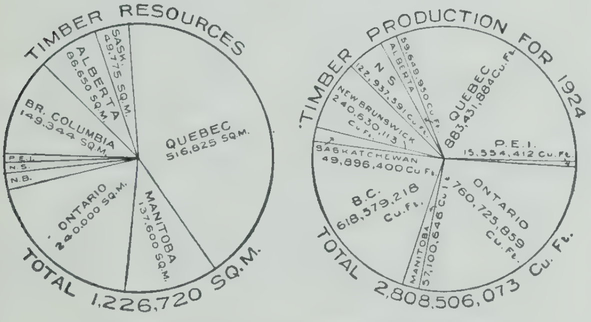


TIME WHEN NOON AT LONDON

SUMMARY OF RESOURCES AND PRODUCTION

Agricultural Resources.—The farm-lands of the Dominion of Canada are its greatest natural resource. Agriculture is the chief occupation of the Canadian people. Although the farm production of Canada is already great, yet there is enough good land not yet cropped to provide for additional millions of people. The Dominion contains 300,000,000 acres of land fit for agriculture; of this only 60,000,000 acres, or one-fifth, have been put under field crops. Yet, although so much land is still not in use, very rapid progress has been made in farm production in Canada during the last twenty years. In 1925 the value of agricultural products reached a little over $1,700,000,000. This sum, if divided evenly among all the people of Canada, would provide about $190 for every person living in the Dominion.

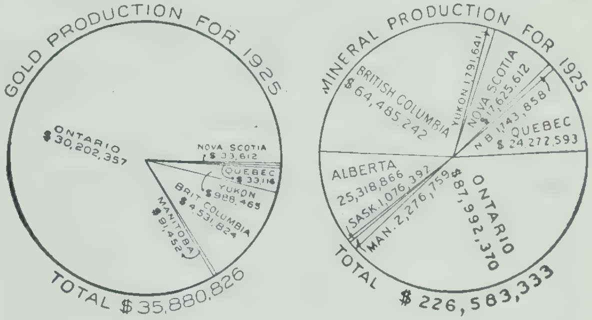
Forest Products.—Second only to the arable lands of the Dominion stand her forest areas. It is estimated that one-third of the total land area of Canada is covered with forest growth. Lumbering is an important industry in British Columbia, in Ontario, in Quebec, and in the Maritime Provinces. The Prairie Provinces also cut much lumber. *See map on page 29.*



Timber Resources and Production, 1924

The pulp and paper industry, though of recent growth, has now reached very large proportions. Quebec is the centre of the industry, cutting more than half of the pulpwood produced in Canada. Four-fifths of the pulp and paper products are exported to the United States. While lumber and pulpwood are the chief forest products, shingles, laths, firewood, fence-posts, railway ties, telegraph and telephone poles, mining timbers, and tanning materials also reach a high aggregate value. The value of the total annual output of forest products of all kinds reached in 1924 the huge sum of $311,000,000.

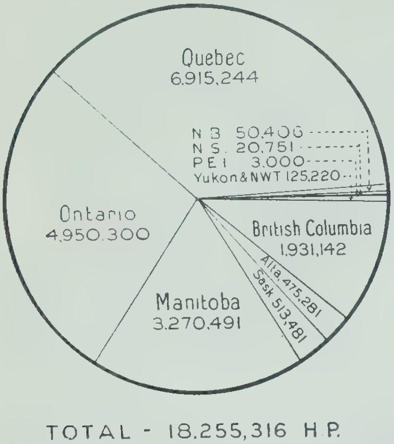
Minerals.—Canada possesses great coal fields in Nova Scotia, Alberta, and British Columbia. There are also within her borders large resources of iron ore, which, although of low grade, is now about to be exploited. The Dominion is the principal source of the world's supply of nickel, asbestos, and cobalt, and produces a large share of gold, silver, copper, lead, zinc, and other rarer metals. Other mineral products of importance are arsenic, chromite, feldspar, graphite, gypsum, mica, and talc. The mineral resources of the Dominion are so wide-spread that all the provinces, except Prince Edward Island, New Brunswick and Saskatchewan share largely in the production of mineral wealth. *See map on page 50.*



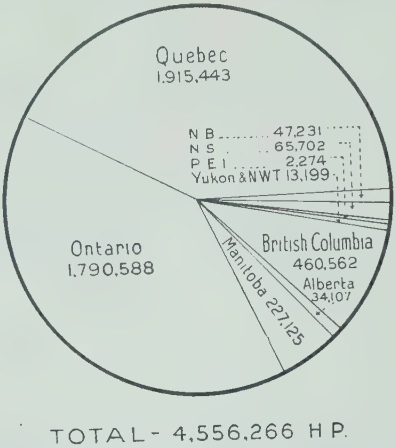
Value of Gold and Mineral Production, 1925

Water-Power Resources.—Water-power is widely distributed over the country. The value of this water-power to Canada can scarcely be over-estimated. The progress of Canadian industries has been in great part due to cheap hydro-electric power. The pulp and paper industry, for instance, could not have developed without it. It has supplied the place of coal, to a great extent, in the two provinces—Ontario and Quebec—which lack that important mineral and which are far from the Canadian coal fields. In many places electrical energy is being distributed to farmers for lighting and power purposes.

Electric power in time will play a large part in the progress of the rural life of Canada, as well as in her city homes, workshops, and factories.

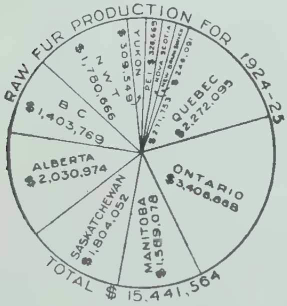


Available Water-power in Canada
The quantity of water-power available is expressed in horse-power.



Developed Water-power in Canada
The quantity of water-power developed is expressed in horse-power.

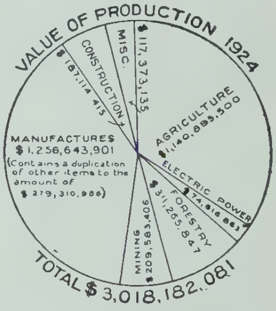
Fisheries.—Canada has fisheries of exceptional value on both the Atlantic and Pacific coasts and also in her fresh-water lakes. The annual yield of these fisheries, reaching a value in 1925 of about $48,000,000, makes Canada third in rank among the fishing countries of the world, being surpassed by Great Britain, Japan, and the United States. About 75,000 Canadians are employed in this industry. Most of the products of the deep-sea fisheries are exported, the chief centres of population in Canada being too far removed from the fishing grounds to make shipment profitable.



Value of Raw Fur Production, 1924-25

Furs.—Canada holds high rank among the fur-producing countries of the world. The wide northern territories are the home of fur-bearing animals of many valuable types. All the provinces contribute to the total fur production of the Dominion. This has an annual value ranging from $15,000,000 to $20,000,000. An interesting development in recent years has been the domestication of the silver fox, one of the most valuable fur-bearing animals. In 1925 there were more than 41,000 silver foxes valued at upwards of $9,000,000 on Canadian fox-farms. About 2,100 fox-farms are now in operation. Fox-farming has proved so profitable that similar experiments with mink and other fur-bearing animals are now in progress. There are several Karakul-sheep-farms in operation in Canada, the largest of which is in Alberta. Their fleece is known as Persian lamb.

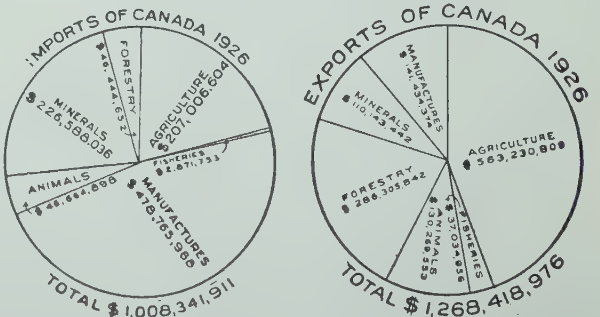
Manufacturing.—Canada possesses over 22,000 manufacturing establishments, turning out a product in 1924 worth over one and a half billion dollars. The leading branches of Canadian manufacture are closely related to the products of the field and forest. More than half of the total value of manufactured output in 1920 came from vegetable, animal, and wood and paper products. Iron and steel goods, textiles, and rubber goods also bulk largely in the total output of manufactures of the Dominion.



Value of Production 1924

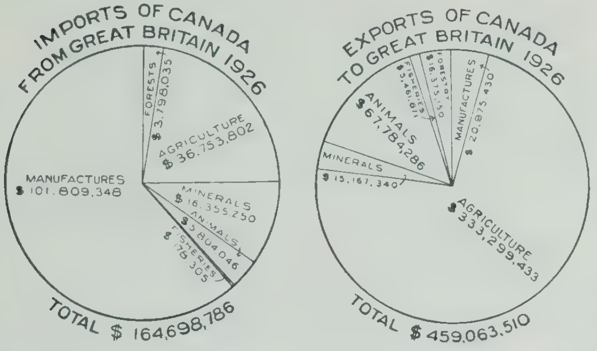
TRADE

Since there is so great and varied a supply of raw materials, as well as such splendid manufacturing facilities, it is plain that the trade of Canada must be very large. The

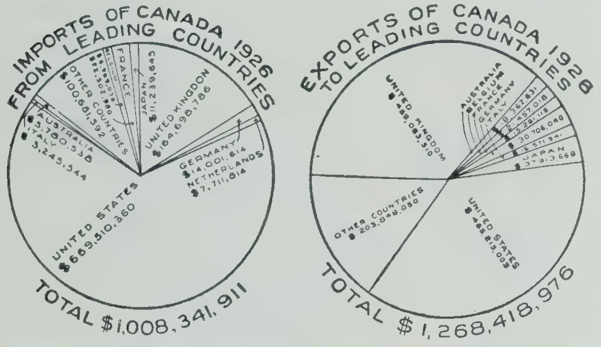


Value of Imports and Exports, 1926

principal exports are agricultural products, particularly wheat, oats, vegetables, fruit, meat, hides, bacon, butter, cheese, and eggs; products of the fisheries, such as fresh fish, canned salmon, lobsters, and sardines; mineral products, principally gold, silver, nickel, copper, asbestos, and mica; forest products, such as dressed lumber, shingles, laths, wood-pulp, and paper; and furs, both raw and dressed.



Imports from and Exports to Great Britain, 1926



Imports from and Exports to Leading Countries, 1926

The principal manufactures exported are flour and newspaper print, of which Canada exports greater quantities than does any other country. Automobiles agricultural implements, refined sugar, and rubber goods are other valuable exports. Our principal imports are iron and steel goods, anthracite coal, manufactured cottons and woollens, drugs, dies, and chemicals, and petroleum. We also import many raw materials and food-stuffs which northern countries, such as Canada, cannot produce, such as raw sugar, molasses, cotton, silk, tropical fruits and nuts, tea, coffee, spices, rice, and crude rubber.

Helps.—On an outline map fill in the principal lines of railway in Canada. Note how the eastern and central provinces are connected with the western provinces. From the map note at what points the railways connect with those of the United States. What parts of Canada are most completely supplied with railways? On the map of the World note the position of Canada in relation to the other great trading countries. Locate the chief seaports of Canada.

Study the diagrams under "Trade" on pages 66 and 67 and make a list of the chief countries in order: (*a*) from which Canada imports products; (*b*) to which Canada exports products. Make a list of the chief products of Canada. Make a list of (*a*) the chief imports of Canada; (*b*) the chief exports of Canada. Arrange these imports and exports in order of value. Show the relation of the exports and imports to the products. Compare the exports of Canada from Great Britain and the United States; compare the imports. On an outline map of the world mark the route followed from the leading Canadian ports in the East and in the West to the principal ports of the countries with which Canada does business.

THE PROVINCES OF CANADA

BRITISH COLUMBIA

Position and Extent.—British Columbia extends from the 49th to the 60th parallel of latitude and from Alberta to the Pacific Ocean and Southern Alaska. It averages 425 miles in width.

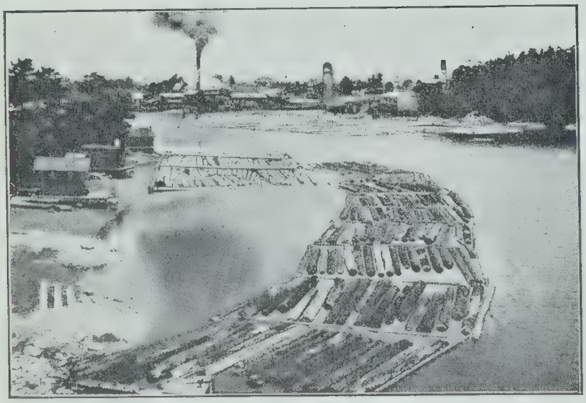
People.—The white population is almost entirely of Canadian or British extraction, with a sprinkling of citizens born in the United States. There has been, however, a considerable immigration from China and Japan, and about 30,000 Chinese and Japanese have made their homes in the province. The former are mainly engaged in railway work, market-gardening, and domestic service and the latter in fishing and lumbering. There are also about 20,000 Indians, most of whom live upon their reservations.

Coast-Line.—Only the southern half of the province fronts upon the Pacific, for a long, narrow coastal strip belonging to Alaska cuts off the northern portion from the sea. The actual distance from the south-western corner of the province to *Portland Canal*, the most northern inlet of the Pacific touching British Columbia is about 500 miles. The coast-line, however, is so irregular and so indented with long inlets running far into the land, that the mainland has an actual shore-line measuring 7,000 miles in length.

The islands along the coast are very numerous. The most important is Vancouver Island, 285 miles long, and from forty to eighty miles wide. Its area is 20,000 square miles, almost the size of Nova Scotia. The next largest are the Queen Charlotte group, separated from the mainland by *Hecate Strait.*

The multitude of bays and sounds along the whole coast, both of the mainland and of the larger islands, provide numerous harbors. In some of the inlets the water is too deep to afford anchorage, but in all there is shelter from the storms of the Pacific.

Surface, Climate, and Industries.—With the exception of a comparatively small area in the Peace River District, British Columbia lies wholly within the Canadian Cordillera. The surface and climate of the Cordillera have already been described, as well as the chief industries. *See pages 58 to 62.* It is sufficient to add that the enormous natural resources of the province in its timber, its minerals, its fisheries, and its rich agricultural lands, make it one of the most important sections of the Canadian Confederation.

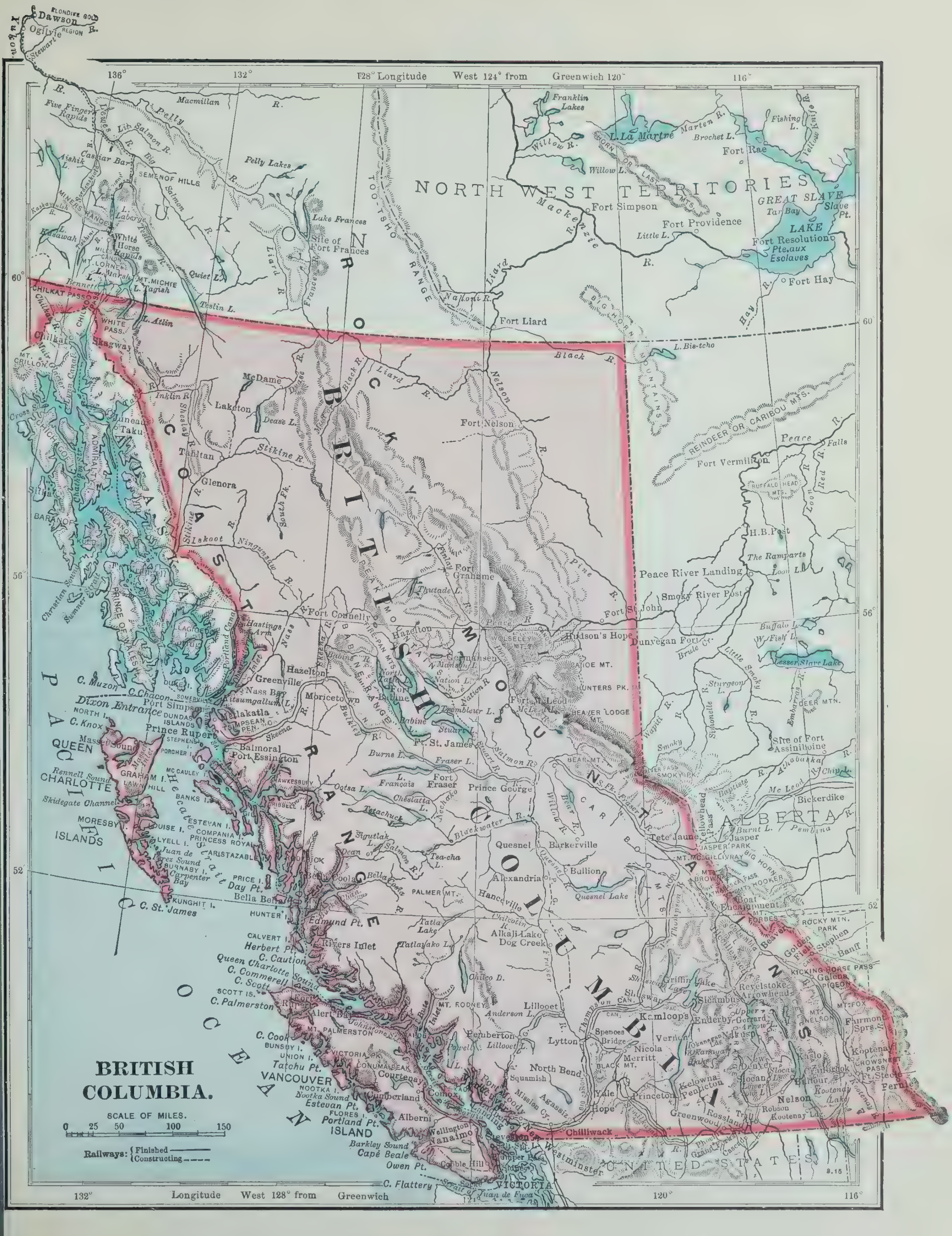


Puget Sound Lumber Company, Victoria

Transportation.—British Columbia is well provided with railways. Both the Canadian National and the Canadian Pacific enter the province, the former having terminals at Vancouver and Prince Rupert and the latter at Vancouver. All the larger valleys have good railway communication with both east and west. Within the province the *Pacific Great Eastern Railway,* owned and operated by the province, opens up large areas in the interior. There is also good railway communication with the United States. Vancouver Island is well supplied with railways. *See Railway Map on page 64.* The ports of Vancouver, Victoria, and Prince Rupert have excellent harbors and have communication by water with all the chief ports of the world.

Cities and Towns.—*Victoria,* the capital of British Columbia, is built upon the eastern side of a narrow inlet opening into Vancouver Island from the *Strait of Juan de Fuca.* There are excellent harbor facilities. *See illustration on page 63.* Although the commerce of the city is considerable, and although it has several important industries, Victoria is essentially a residential city. The Legislative Buildings, which overlook the harbor, are among the most beautiful and imposing structures on the continent. Three miles from Victoria is the fine harbor of *Esquimalt,* defended by modern fortifications and possessing a large dry-dock. On *Saanich Mountain,* close to the city, is erected the Dominion Observatory, possessing a telescope which, with only one exception, is the largest anywhere.

Vancouver, with its important rail and ocean connections, is the chief city of the province. The city, situated on a peninsula jutting out into *Burrard Inlet,* has one of the finest natural harbors in the world. It is the western gateway of the Dominion, and its import and export business is very large. It has several large grain elevators and more are being constructed. It is also the headquarters of the larger industrial enterprises of the province, which include lumbering, salmon-canning, mining, sugar-refining, and ship-building. It has many fine public



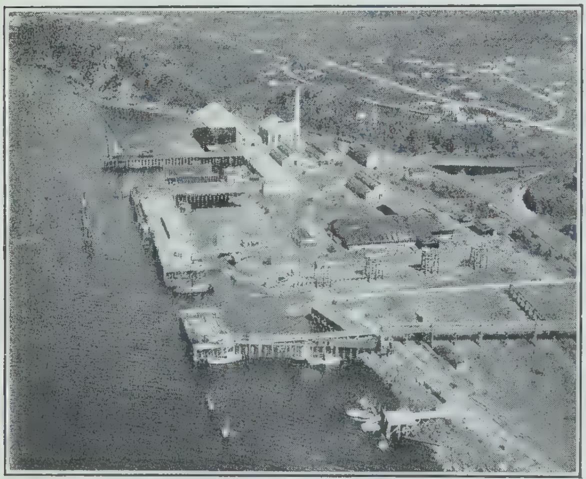
BRITISH COLUMBIA.

buildings, including one of the Provincial Normal Schools. *Stanley Park*, famous for its giant trees, is a centre of attraction in the city. Within the city limits, at *Point Grey*, the University of British Columbia has magnificent grounds.

New Westminster, twelve miles from Vancouver and connected with it by an electric railway, has large salmon and lumber interests.

Nanaimo, on the east coast of Vancouver Island, is the headquarters of the oldest colliery interests in the province. The adjacent country is good farm-land, and fruit-growing and mixed farming are rapidly increasing about the city. Nanaimo has a good harbor and very picturesque surroundings.

Prince Rupert, one of the western terminals of the Canadian National Railways, is a port of growing importance. It is also the headquarters of the fisheries of the north-western coast.


Courtesy of the Canadian Air Board
The Harbor of Prince Rupert

Rossland, surrounded by hills containing immense deposits of iron and copper ore, is an important mining city. At *Trail*, fourteen miles distant, are immense smelting works, a lead and silver refinery, and a factory for making lead pipe. *Fernie*, on the Crowsnest Pass Railway, is a coal-mining centre. *Nelson*, on the west arm of Kootenay Lake, is the commercial centre of the southern interior part of the province. It has a large smelter, a flour-mill, and fruit-packing establishments. *Kamloops*, on the line of two transcontinental railways about 250 miles east of Vancouver, is the distributing centre for a large agricultural, mining, and lumbering district.

Helps.—On an outline map mark the boundaries of British Columbia. Compare it in area and population with the Dominion. Mark carefully the coast-line. Write a brief description of the coast-line. Describe Vancouver Island. After reading carefully pages 58 to 62 describe the surface. Mark on your map the chief mountain ranges and the principal valleys. Give a brief description of the agricultural industry. Write a description of the fishing, lumbering, and mining industries. How are the natural resources related to the manufactures?

Why is Vancouver such an important port? Of what benefit to Vancouver is the Panama Canal? Why is the western movement of Alberta grain of such benefit to Vancouver? On the map of the world note the relationship of the British Columbia ports to those of Asia and Australia. Describe Victoria and Nanaimo.

ALBERTA

Area and Population.—Alberta, the most westerly of the three Prairie Provinces, is not quite so regular in shape as the other two. The rectangular form of the province is broken on the south-west, where the main crest line of the Rocky Mountains, running from south-east to north-west, forms the boundary between Alberta and British Columbia. The province stretches from the 49th to the 60th parallel of latitude. The width varies from 180 to 400 miles.

A rapid increase of the population of Alberta has kept pace with the extension of railways. The greater number of the settlers have English for their mother tongue. They have come from Eastern Canada, the British Isles, and from the United States. There are many settlers, also, from various countries of Europe. These are quickly learning the English language and becoming good citizens of their adopted country.

Surface.—The larger part of Alberta lies within the Great Central plain. *See page 51.* On the west a strip of territory is included in the Cordillera, while on the north-east a small section is included in the Laurentian Plateau. *See pages 45 and 58.* The surface of the province may be divided into four natural divisions.

Rolling, treeless prairie extends from the international boundary to about fifty miles north of Calgary. The prairie, lying entirely in the third prairie steppe, is of considerable elevation, and gradually rises to the foothills of the Rockies, which occupy a belt about fifty to sixty miles wide along the south-western border of the province. Through the prairie districts the rivers have cut deep valleys, and narrow deep ravines, which were at one time the bed of tributary rivers, run out from them at right angles. These are the "coulees" of the West.

The mountain area of the province lies mainly in the southern zone. It comprises the eastern side of the Rockies, with its abrupt slopes and irregular surface deeply cut by ravines and canyons. Alberta is famous for its mountain scenery, and the Waterton Lakes, *Banff*, *Lake Louise*, Jasper Park, and other points are visited by thousands of people every year. The most important of the mountain passes between Alberta and British Columbia are the Crowsnest, traversed by the Canadian Pacific Railway; the *Kicking Horse*, through which the main line of the Canadian Pacific enters British Columbia; and the Yellowhead, which is the route taken by the Canadian National Railways.

The parkland consists of the territory extending northward from the prairie to the divide separating the basins of the North Saskatchewan and the Athabaska Rivers. This region is blessed with rich soil, abundant water, and scattered timber.

Northern Alberta is much more heavily timbered, although there is much open land even there. The great tracts of spruce and poplar are valuable. This district is being rapidly opened up for settlement. Railways have penetrated far northward into the Peace River District on the west and to *Waterways* on the east. Settlers are making homes along the routes of these pioneer railroads, and already there is a group of a dozen prosperous agricultural settlements in the valley of the Peace River.

The soil over nearly the whole extent of the province is exceedingly fertile. In many places there is a covering of black vegetable mould, one to three feet thick, over a subsoil of clay. Although good soil is found everywhere, that of Central and Northern Alberta is more certain in crop production than is the non-irrigated land in Southern Alberta.

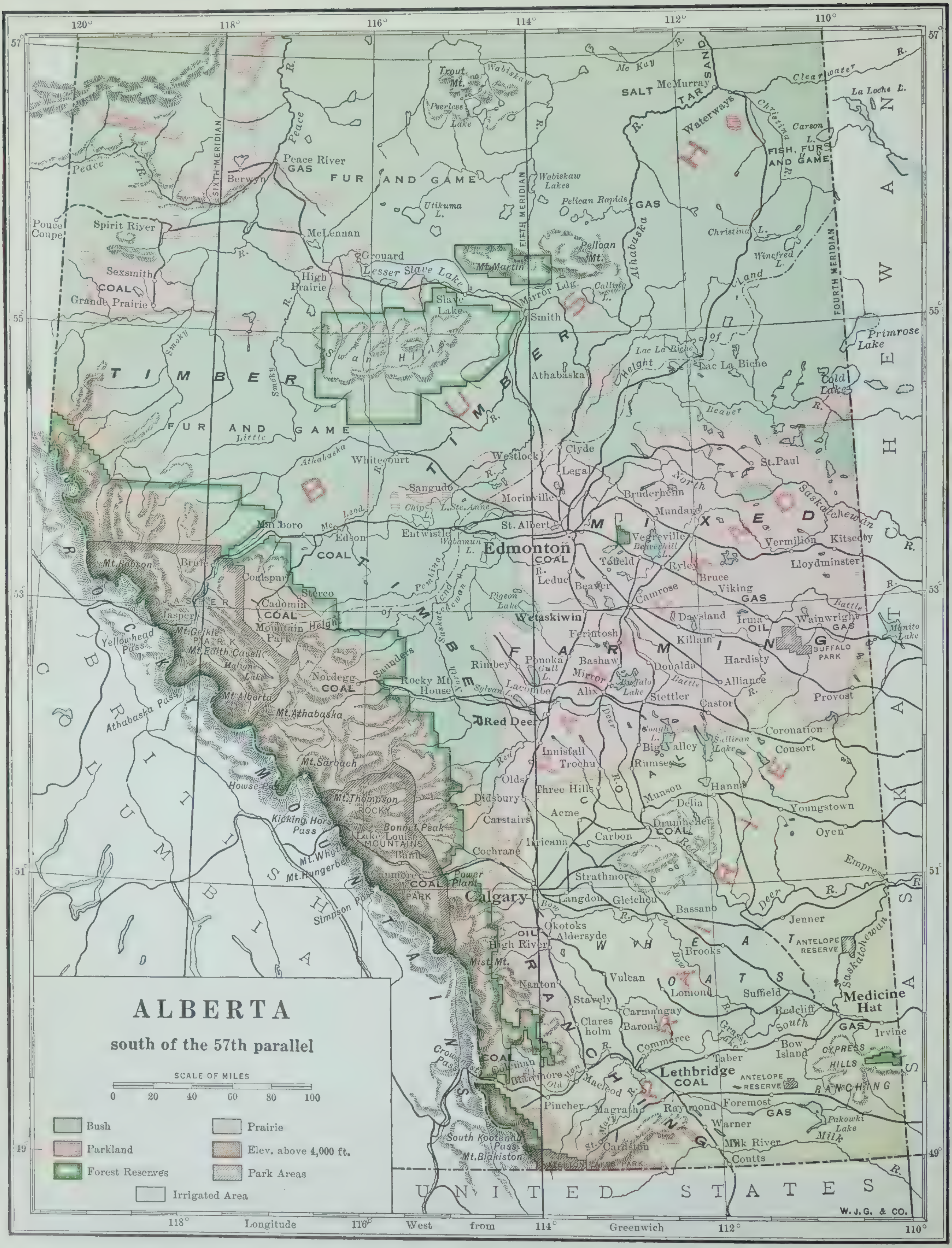
Lakes and Rivers.—In the southern part of the province are numerous shallow lakes, which almost or entirely dry up in seasons of drought. Central Alberta, which has a heavier rainfall, contains many large lakes. In the northern region, the largest bodies of water are found. Lake Athabaska is 195 miles long, *Lesser Slave Lake* is sixty. The total area of the northern lakes is more than 2,000 square miles.

Clay Manufacturing Plant, Medicine Hat

The extreme south of the province is drained by the Milk River, which, after a course of one hundred miles in Alberta, crosses the international boundary and joins the Missouri in the state of Montana.

With the exception of this comparatively small area, the whole of Southern and Central Alberta is drained by the South and North Saskatchewan Rivers. The South Saskatchewan is fed by the waters of the *Bow*, *Old Man*, and Red Deer Rivers, while the *Battle River* is the chief tributary of the North Saskatchewan.

Northern Alberta is drained by the two great northern rivers, the Peace and the Athabaska. These rivers, with their tribu-

ALBERTA
south of the 57th parallel
SCALE OF MILES
0
20
40
60
80
100
Bush
Prairie
Parkland
Elev. above 4,000 ft.
Forest Reserves
Park Areas
Irrigated Area
120°
118°
116°
114°
112°
110°
57°
55°
53°
51°
49°
Longitude
West
from
Greenwich
SIXTH MERIDIAN
FIFTH MERIDIAN
FOURTH MERIDIAN
TIMBER
FUR AND GAME
FISH, FURS AND GAME
MIXED FARMING
WHEAT
RANCHING
SALT
TAR SAND
GAS
COAL
OIL
Peace River
Peace River GAS
Berwyn
Pouce Coupe
Spirit River
McLennan
Grouard
High Prairie
Sexsmith
Grande Prairie
Lesser Slave Lake
Slave Lake
Swan Hills
Mt. Martin
Pelican Mt.
Trout Mt.
Peerless Lake
Utikuma L.
Wabiskaw Lakes
Pelican Rapids
McMurray
Waterways
Christina L.
Winefred L.
Carson L.
La Loche L.
Clearwater R.
Mc Kay R.
Athabaska R.
Calling L.
Mirror Ldg.
Smith
Athabaska
Lac La Biche
Height of Land
Primrose Lake
Cold Lake
Beaver R.
St. Paul
North Saskatchewan R.
Vermilion
Kitscoty
Lloydminster
Whitecourt
Westlock
Clyde
Legal
Morinville
Sangudo
Bruderheim
Mundare
Vegreville
Beaverhill L.
St. Albert
Edmonton
Entwistle
Edson
Marlboro
Mc Leod R.
Wabamun L.
Chip L.
L. Ste. Anne
Tofield
Ryley
Bruce
Viking
Leduc
Beaver
Camrose
Daysland
Irma
Wainwright
Buffalo Park
Manito Lake
Battle R.
Pigeon Lake
Wetaskiwin
Ferintosh
Killam
Hardisty
Ponoka
Bashaw
Donalda
Alliance
Mirror
Buffalo Lake
Rimbey
Lacombe
Alix
Stettler
Castor
Provost
Sylvan L.
Rocky Mt. House
Red Deer
Coronation
Consort
Sullivan Lake
Big Valley
Rumsey
Innisfail
Trochu
Olds
Three Hills
Didsbury
Acme
Munson
Hanna
Delia
Youngstown
Oyen
Carstairs
Irricana
Carbon
Drumheller
Cochrane
Strathmore
Calgary
Langdon
Gleichen
Bassano
Empress
Jenner
Deer R.
Red R.
Bow R.
Okotoks
Aldersyde
High River
Brooks
Antelope Reserve
Vulcan
Lomond
Suffield
Redcliff
Medicine Hat
Nanton
Stavely
Carmangay
Claresholm
Barons
Commerce
Lethbridge
Bow Island
Irvine
Cypress Hills
Taber
Grassy Lake
South Saskatchewan R.
Macleod
Old Man R.
Pincher
Magrath
Raymond
Foremost
Warner
Pakowki Lake
Milk River
Coutts
Cardston
St. Mary R.
Coleman
Blairmore
Crows Nest Pass
South Kootenay Pass
Mt. Blakiston
Mist Mt.
Canmore
Banff
Power Plant
Lake Louise
Bonnet Peak
Mt. Whyte
Mt. Hungerbee
Simpson Pass
Kicking Horse Pass
Howse Pass
Mt. Thompson
Mt. Sarbach
Mt. Athabaska
Mt. Alberta
Athabaska Pass
Mt. Edith Cavell
Mt. Geikie
Jasper
Jasper Park
Yellowhead Pass
Mt. Robson
Brulé
Coalspur
Cadomin
Sterco
Mountain Park
Nordegg
Saunders
Pembina R.
Smoky R.
Little Smoky R.
ROCKY MOUNTAINS
BRITISH COLUMBIA
SASKATCHEWAN
UNITED STATES
W. J. G. & CO.

taries, are important as highways of transportation to the still more distant northland beyond the confines of the province.

Climate.—The high altitude of Alberta ensures dry, clear, invigorating air. The winters, though cold at times, are free from violent storms, and the summers, though warm, are never humid and oppressive. Although the province extends for 760 miles from north to south, the summers are as warm at *Dunvegan* on the Peace River, or at *Fort Vermilion* still farther north, as they are at *Cardston* close to the international boundary, nearly 650 miles farther south.

The Town of Drumheller

The reason for this even spread of heat throughout the length of the province is found in the altitude of the land. The land slopes gently from south to north, and the lower altitude of Northern Alberta, with long summer days, offsets the more northerly latitude. The Chinook wind has also an equalizing influence in modifying the winter climate. *See page 55.*

The rainfall averages twelve to thirteen inches annually in the dry south, and nineteen to twenty-two inches in the central and northern part of the province. The scanty rainfall of the eastern parts of the south is scarcely sufficient for agriculture, unless irrigation or special methods of cultivation to conserve the natural moisture are used. In Central and Northern Alberta the rainfall is quite sufficient for mixed farming.

Agriculture.—The agricultural resources of the province are exceedingly large. It is estimated that only about one-twelfth of the good arable land is now under cultivation.

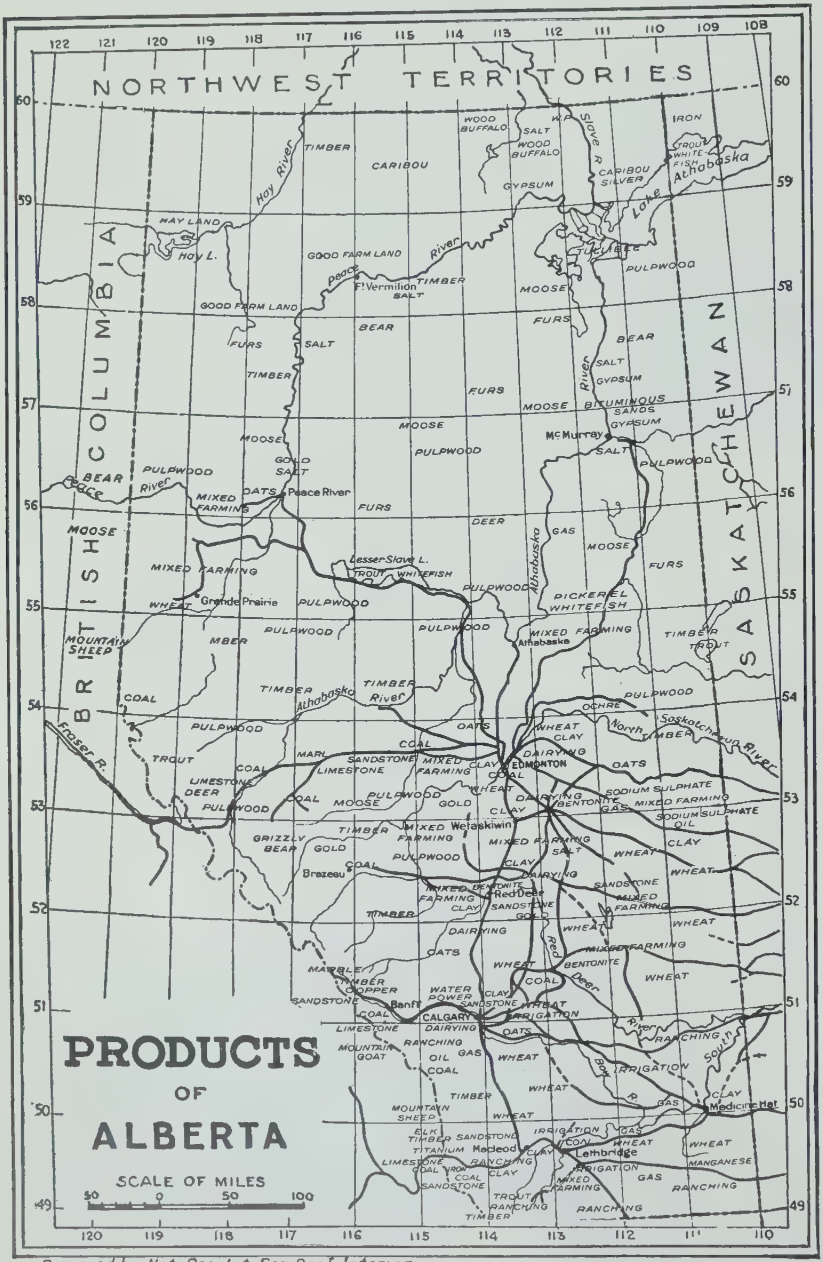
Southern Alberta is an ideal land for horse and cattle-rearing and for sheep-farming. Although much of the grazing land has been converted to grain-growing and mixed farming, this is still the great ranching country of the province. The cattle grazing on the nutritious wild grass of the prairies and the slopes of the foothills make beef of good quality. Cattle and horses can live out on the prairie without shelter all winter, pasturing on the natural hay of the land. The Chinook winds, which melt the snow and lay bare the grass, make this possible.

In recent years great irrigation enterprises, which will eventually water huge tracts of land, have been put in operation at *Calgary*, *Lethbridge*, and *Bassano*. The results have been amazing, and record crops of grain, vegetables, and alfalfa are now grown in these districts.

Central Alberta is magnificently adapted for mixed farming. Wheat, oats, barley, and flax all yield abundantly, while the natural grasses of the country, supplemented by heavy crops of timothy, clover, and other cultivated fodders, make stock-raising and dairying easy and profitable. The Grand Prairie and Peace River Districts are well suited to mixed farming.

Cattle Ranch—Southern Alberta

Other Industries.—Enormous deposits of high grade coal have been found in Alberta. It is estimated that over 56,000 square miles are more or less carboniferous. In any case, there can be no fuel shortage in Alberta for ages to come. Already the province has become one of the chief coal producing and exporting sections of the Dominion.



PRODUCTS

OF

ALBERTA

Prepared by Nat. Res. Int. Ser. Dept. Interior.

Natural gas is found in many places throughout the province and is a great asset, providing cheap power, fuel, and light. Petroleum is found in quite large quantities in the Turner Valley, south-west of Calgary. From it large quantities of commercial gasoline are being produced. Oil is now being obtained from wells in the Wainwright district in Central Alberta. There are also immense beds of tar sands east of the Athabaska River, estimated to contain over six billion tons of bitumen. The province is well supplied with clay and stone. In Northern Alberta there are large salt deposits of considerable value.

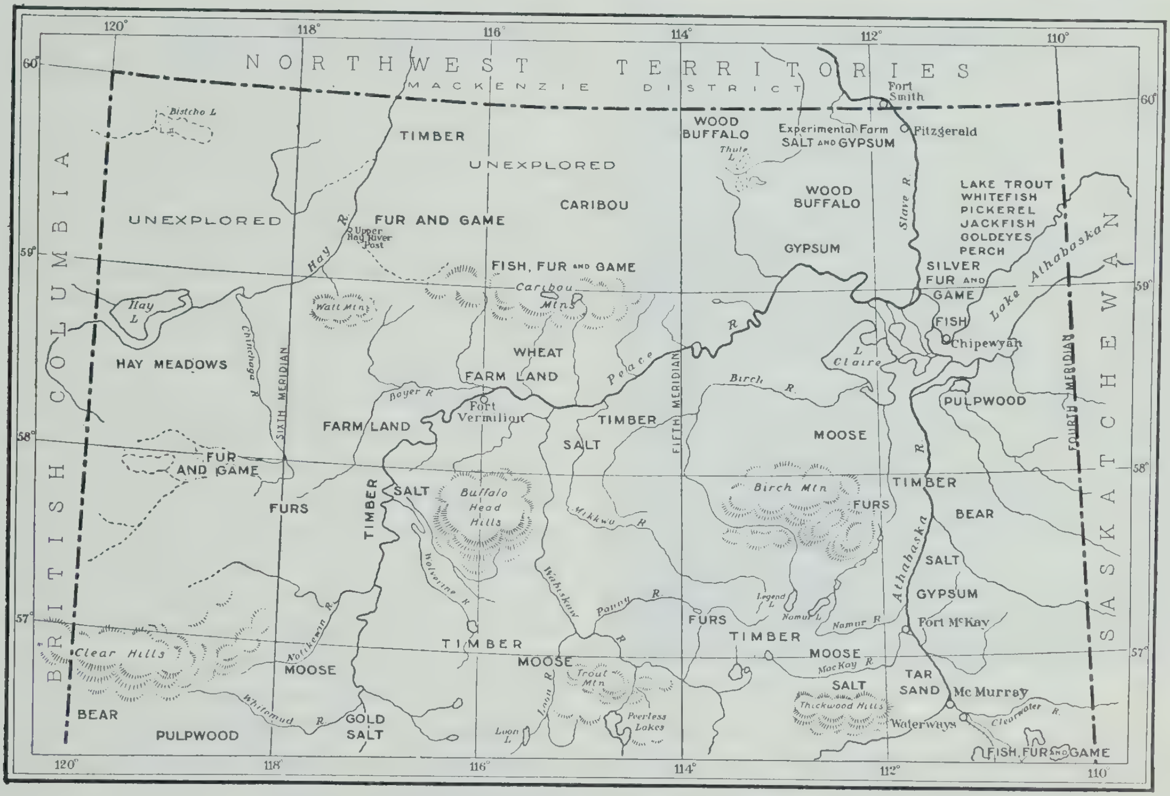
The river valleys in Central Alberta are well timbered with spruce and poplar, while in the north are immense tracts of jackpine, poplar, spruce, and tamarack. These timber-lands afford fuel and building material in abundance. Saw-mills are located at various points.

The lakes of Northern Alberta are well stocked with fish, especially white fish and pike. The fisheries have not yet been fully developed, although a considerable quantity of fish is caught for home consumption and an increasing amount for export.

Fur-trading still holds a place in the life of the province, with Edmonton as the principal market. To this city are brought the skins taken in the whole Mackenzie Basin. Many companies and private traders are engaged in this profitable business. In addition, there are a few fox and muskrat farms in the province.

Manufacturing is playing a large part in the development of Alberta, owing, partly at least, to the cheap fuel which the province possesses in her coal and natural gas. Abattoirs and meat-packing plants are located at Calgary and Edmonton. At many points throughout the province are flour-mills, saw-mills, harness factories, brickyards and tile works, iron foundries, cement works, and stone quarries.

Transportation.—The main lines of both the Canadian National and the Canadian Pacific Railways pass through Alberta on their way from Eastern Canada to the Pacific coast. From the main lines of both of these systems branch lines join all the important villages and towns of the provinces. *See Railway Map on page 64 and Map of Alberta on page 72.*

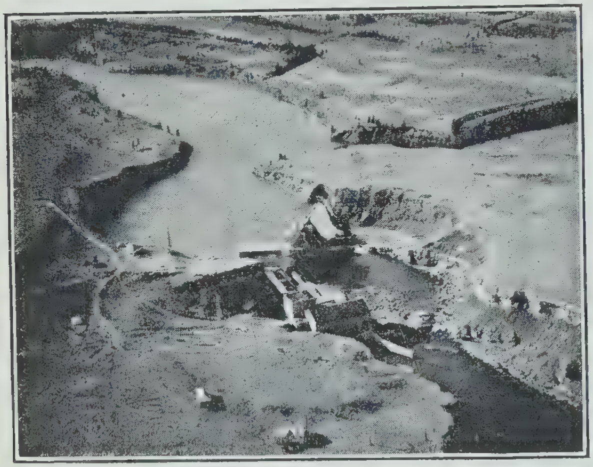


Map of Alberta north of the 57th Parallel of Latitude

Several other railways have been built for colonization purposes and have opened up vast stretches of virgin country for settlement. *The Alberta and Great Waterways Railway* connects Edmonton with Waterways, while the *Edmonton, Dunvegan, and British Columbia* traverses the Peace Valley. In the north country, these railways are supplemented by stern-wheel river steamers, which ply on the northern waters during the summer months. A Canadian Pacific branch connects Lacombe with the lands lying along the valley of the *Blindman River*.

Summer Resorts.—In the mountain area of the province large districts have been reserved by the Dominion Government for forest and game preserves. Good roads have been built through these national parks. Rocky Mountain Park, with Banff and Lake Louise as its chief attractions, contains in its 3,800 square miles of area some of the grandest scenery in the world. Jasper Park, farther north on the line of the Canadian National, is about 600 square miles larger. Waterton Park, at the extreme south is 220 square miles in extent. Several smaller parks, such as that at Wainwright, also have been established to serve as homes for the comparatively few bison and other native animals still remaining of the herds which once roamed the prairies. In the Buffalo Park at Wainwright there are now some thousands of these former monarchs of the plains.

Cities and Towns.—*Edmonton*, the capital of the province is splendidly located on a tableland 200 feet above the North Saskatchewan River. The city lies on both sides of the river, the two sections being connected by a magnificent high-level bridge, with other bridges built at a lower level. It has excellent railway communication with the other parts of the province, and through it passes the main line of the Canadian National Railways on its way from Eastern Canada to the Pacific coast. It is the gateway to Northern Alberta and the centre of the fur industry for the north. In the city are many manufacturing plants, including flour-mills, saw-mills, packing plants, and clothing factories. The Canadian National Railways maintain large car shops there. Several coal mines are in operation within its limits and natural gas from *Viking*, sixty miles distant, is now piped into the city. The Provincial Legislative Building, the buildings of the University of Alberta, and many of the Public Schools are imposing structures.



Power Plant at Seebe on the Bow River

Calgary is the largest city of Alberta. It is situated in the valley of the Bow River, almost at the beginning of the foothills of the Rocky Mountains. As it is the chief distributing centre for Southern Alberta, its wholesale trade is very large. It is the centre of the live-stock industry. Manufacturing is important. There are meat-packing plants, flour and lumber mills, harness factories, and brick and soap works. A large oil refinery is now in operation, and the Canadian Pacific Railway maintains large car shops there. Calgary is supplied with hydro-electric power generated at *Seebe* on the Bow River, and a survey is now being made with a view to developing large power-plants at *Spray Lake* in the Rocky Mountain National Park. Natural gas is largely used for domestic and industrial purposes. It is piped from *Bow Island* and the *Foremost* field and from Turner Valley. Many of the public buildings are built of the grey sandstone found in the vicinity. The Provincial Institute of Technology and Art and one of the Provincial Normal Schools are located there.

Medicine Hat, a divisional point on the main line of the Canadian Pacific, is the centre of a large ranching and farming country. The immense supplies of natural gas in the vicinity afford cheap and abundant fuel and power. It is among the foremost milling towns of Canada. Bricks and sewer-pipes are among the most important of its manufactures. Large greenhouses, heated with natural gas, are located there. *Lethbridge*, on the Crowsnest Pass division of the Canadian Pacific, is the centre of a great coal-mining district and of a fine agricultural country, which has been wonderfully improved by irrigation. It is a railway divisional point and has one of the Dominion Government experimental farms.

Red Deer and *Wetaskiwin*, on the line of the Canadian Pacific between Calgary and Edmonton, are important agricultural centres, and *Macleod*, in the southern part of the province, is the centre of a large ranching district. *Camrose*, the seat of one of the Provincial Normal Schools, *Cardston*, *Raymond*, *Lacombe*, *Stettler*, *High River*, *Taber*, *Vegreville*, and many other towns take care of the growing commercial needs of the province. *Drumheller*, *Coleman*, and *Blairmore*, are important coal-mining centres. *Ponoka* is the location of the Provincial Hospital for the Insane.

Helps.—Mark on a map the boundaries of Alberta. What are the area and population? Into what physical divisions does Alberta naturally fall? Describe each of these, tracing them on the map. Where is the ranching district? What sections require irrigation?

Why? Locate the coal areas. Locate the areas where oil will probably be found? Where is natural gas found? What are the advantages to Alberta in the presence of coal, oil, and natural gas? What are the natural resources of the mountain section?

Write brief descriptions of Waterton Park, Banff, Lake Louise, and Jasper National Park? What are the advantages of these to Alberta? Name the chief rivers of Alberta. What is the commercial importance of each? Name the lakes. Of what use are they to the province? What is the importance of the northern section to the province as a whole? What are the possibilities of this section? Account for the location of Edmonton and Calgary. Point out the commercial possibilities of each. Locate on the map the railways of Alberta. What benefit have the colonization railways been to the province? What advantage is there in shipping Alberta grain to England by way of Vancouver over sending it by the Lake Route?

SASKATCHEWAN

Area and Population.—The province of Saskatchewan, the central one of the three Prairie Provinces, like Alberta, extends from the 49th to the 60th parallel of latitude. From east to west it has an average width of 320 miles. The population is drawn from much the same sources as those of Alberta.

Surface.—Saskatchewan lies for the most part within the Great Central Plain, but a considerable section in the northern and north-western part is included in the Laurentian Plateau. The surface and drainage have already been described in dealing with these two great physical divisions. *See pages 45 and 51.* The southern part of the province extending from the international boundary as far north as the *Saskatoon* district, and across the whole width of the province, is open, rolling prairie country. Most of this area is in the second prairie steppe, with an average elevation of 1,500 feet above sea-level. The western part of the province is in the third prairie steppe, which is still higher and more undulating. *See pages 51 and 52.*

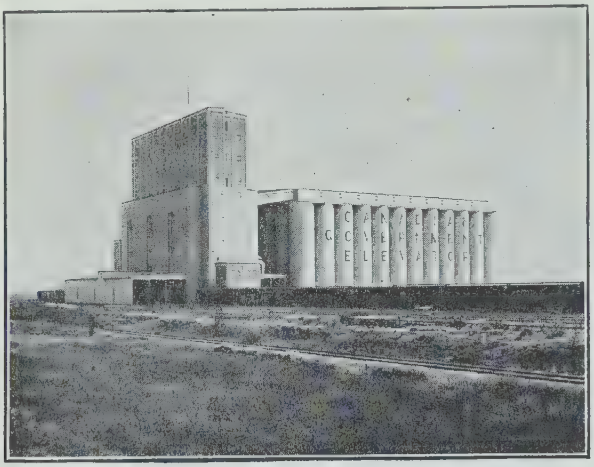
Northward from the Saskatoon to the *Prince Albert* district is a belt of park-lands, where open prairie and clumps of woodland give a pleasing variety to the landscape. This section is particularly well suited to stock-raising. From the Prince Albert district northward to Reindeer Lake and Lake Athabaska is a densely wooded zone, but in the extreme north of the province this forest thins considerably.

The soil over almost the whole province is very fertile, consisting of a rich loam, eight to twenty inches deep, over a clay subsoil. Here and there in the south, however, are stretches of alkaline land which is useless for farming, but fortunately these form but a very small part of the whole surface of the province.

Clearing light Forest-Land

Climate.—The elevation of the province above the sea ensures a very clear and dry atmosphere. The summer days are frequently very hot, yet the heat is moderated by refreshing breezes, and the nights are cool and pleasant. The winters are severe, but the dryness of the atmosphere moderates the cold of winter as it does the heat of summer. There is much sunshine and clear bright weather at all seasons. The rainfall is light, averaging only about fifteen inches yearly in the north and east, and only twelve or thirteen inches in the west and south-west. It is sufficient, however, and only comparatively small areas of the province need irrigation.

Industries.—Saskatchewan is a great agricultural province. It is estimated that nearly half of the total area is suitable for agriculture, without taking into account the forest-lands. Wheat is the main grain crop. The best wheat district is the country between the *Moose Jaw* district and the eastern boundary of the province. Hard wheat grows there to perfection, owing to the rich soil, the dry climate, which ensures the absence of rust, and the large amount of sunshine during the long, clear days of summer. Oats are next in importance. Barley, flax, rye, peas, beans, turnips, and hay are also valuable crops. The south-western part of the province adjoining Southern Alberta, is the chief ranching section. There are however, many very large herds scattered here and there, while almost every farm has a herd of reasonable size. The abundance of natural fodder, which makes stock-raising easy and profitable, also encourages dairying. Much butter and cheese is produced.



Canadian Government Elevator at Saskatoon

There are large deposits of lignite coal in the southern portion of Saskatchewan. About thirty mines are in operation. While it is known that the province has other mineral resources, these have not yet been developed to any extent. Considerable attention has lately been given to the manufacture of pottery from the excellent clay found in various districts.

North of the Saskatchewan River lumbering is carried on extensively, and many saw-mills are in operation. Prince Albert is the centre of this industry. In Northern Saskatchewan a number of large areas have been set aside by the Dominion Government as forest reserves.

The lakes and streams of Saskatchewan teem with fish. These provide wholesome food for the settlers. Although there are fish in plenty for millions of people, the development of the fisheries of the province on a commercial scale is still in its infancy. The principal fish caught are whitefish, pike, and sturgeon.

The northern forests still abound with fur-bearing animals. Bear, wolf, otter, beaver, marten, and mink skins are still brought in to the trading-posts of the north in large numbers. Prince Albert and *Battleford* are the leading centres of the fur-trade.

Manufacturing is not yet an important industry, although there are many flour-mills throughout the province, and a good deal of cement and brick is being made. There are also foundries and machine-shops at various points.

Transportation.—Saskatchewan is traversed by the main lines of both the Canadian National and the Canadian Pacific Railways. Branch lines connect all the important points. *See map on page 64.*

Cities and Towns.—*Regina*, on the main line of the Canadian Pacific Railway, is the capital of Saskatchewan. It is the distributing centre of a rich farming district and has direct railway connection with all the important points in the West. A large oil refinery gives employment to many men. The beautiful Provincial Legislative Buildings are situated there. Regina College and a Provincial Normal School are the chief educational institutions.

Saskatoon, the second city of the province is situated on both banks of the South Saskatchewan. The river is crossed by several railway and traffic bridges. The city is important commercially, and it is also a

The City of Saskatoon

railway and distributing centre. The University of Saskatchewan and a Provincial Normal School are located there. *Moose Jaw*, the third city, is a divisional point on the Canadian Pacific, and also has direct connection with St. Paul and Minneapolis. It has large stock-yards, big flour-mills, and capacious elevators. *Prince Albert*, the fourth city, is beautifully situated on the south bank of the North Saskatchewan River. Its location at the edge of the wooded lands of the province is very favorable, making it the chief centre for the timber, fur, and fish trades.

Swift Current, on the main line of the Canadian Pacific, lies in the midst of a rich farming district. It has flour-mills, planing-mills, and cement works. *North Battleford*, on the north bank of the North Saskatchewan, is a divisional point on the Canadian National Railways and is an important distributing centre. *Weyburn*, in the heart of a prosperous farming community, is also an important distributing centre. It has a large Provincial Hospital for Mental Defectives.

Yorkton, *Estevan*, *Qu'Appelle*, *Humboldt*, *Indian Head*, *Moosomin*, *Kerrobert*, *Rosthern*, *Maple Creek*, and *Wolseley* are all leading places serving as centres for the surrounding farming districts.

Helps.—Trace the boundaries of Saskatchewan. What are its area and population? Compare with Alberta. Describe the surface of the province. Name the chief rivers and lakes. Are these important commercially? Compare the surface and climate with that of Alberta. Account for the importance of Saskatchewan as a grain-growing province. Compare with Alberta in this respect. What are the chief natural resources of the province? Is it likely that Saskatchewan will ever become a manufacturing province? Compare the water-power of Saskatchewan with that of Alberta. Name and locate the chief cities and account for the growth of each. Why is it that Saskatchewan has several cities, all about the same size?

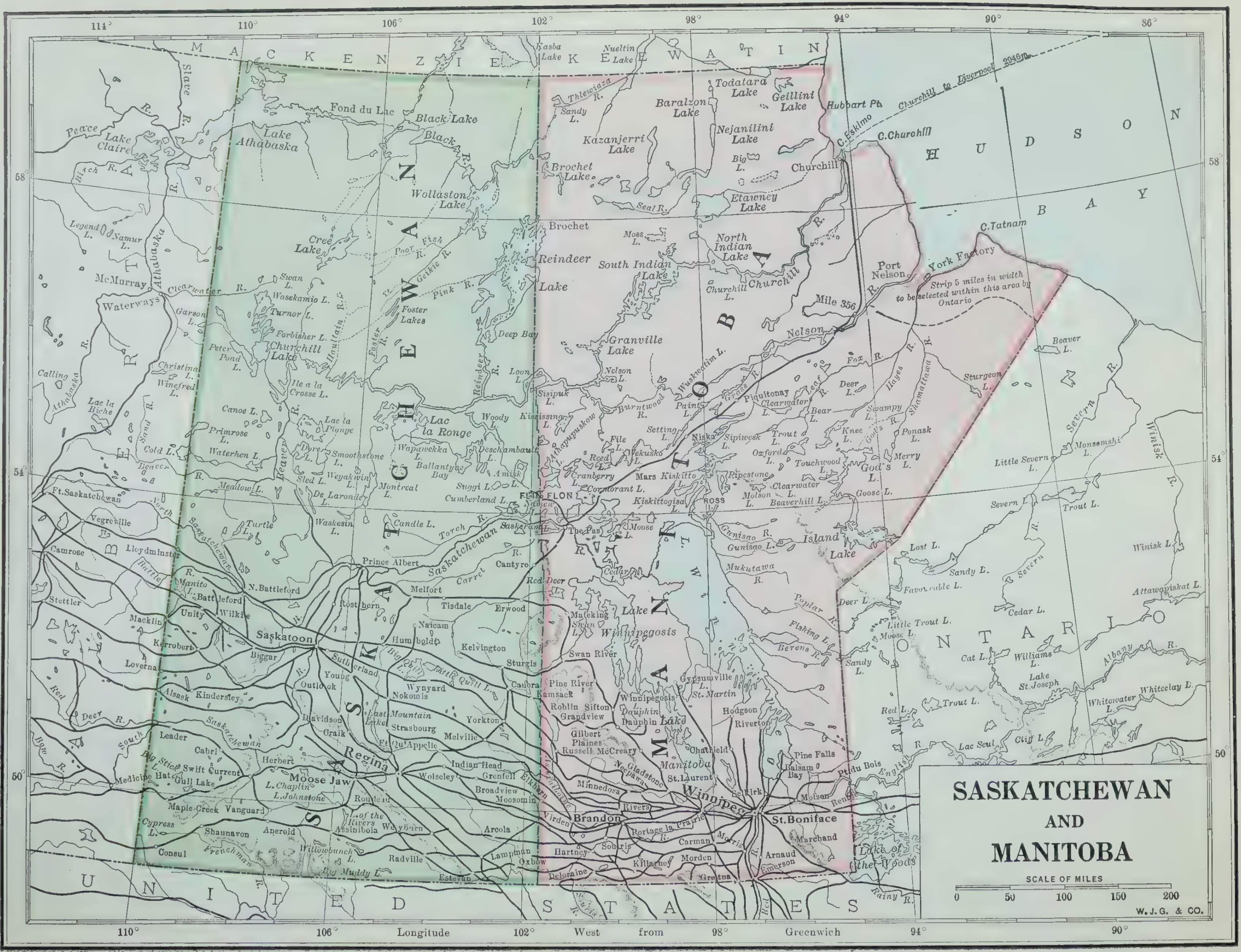
MANITOBA

Area and Population.—The province of Manitoba lies near the centre of the North American continent, almost midway between the Atlantic and Pacific Oceans. From Hudson Bay and Ontario on the east to Saskatchewan on the west, the breadth of the province varies from 250 miles to 500 miles. From the international boundary, Manitoba extends from south to north for a distance of 750 miles. The population now numbers about 640,000, and, although there are many settlers of other nationalities, the Canadian and British-born inhabitants form the great majority of the people.

Surface and Soil.—Manitoba lies partly in the Great Central Plain and partly in the Laurentian Plateau. The portions of Manitoba lying within these great physical divisions have already been described, as have also the lakes and rivers. *See pages 45 and 51.*

The prairie region comprises the extreme southern and south-western portion of the province, and includes only about one-eighth of its total area. It is divided into two sections by an escarpment, 360 to 400 feet high, which runs through the province from the Pembina Mountains on the international boundary to the Porcupine Hills on the boundary of Saskatchewan. The eastern and lower steppe is an almost flat plain. West of the escarpment is the higher, rolling ground of the second steppe. Here the country is more varied in appearance, with many rough, stony hills and deep valleys. The soil of the second steppe is lighter than that of the flats to the east, but is still extraordinarily good. The prairie land is treeless, except along the river courses and around the lakes.

Threshing with Gasoline Engines


SASKATCHEWAN
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MANITOBA
Churchill to Liverpool 2946m.
Hubbart Pt.
C. Eskimo
C. Churchill
Churchill
C. Tatnam
York Factory
Port Nelson
Mile 356
Strip 5 miles in width to be selected within this area by Ontario
Nelson
Kasba Lake
Nueltin Lake
Thlewiaza R.
Sandy L.
Todatara Lake
Geillint Lake
Baralzon Lake
Nejanilini Lake
Kazanjerri Lake
Big L.
Brochet Lake
Seal R.
Etawney Lake
Brochet
Moss L.
North Indian Lake
Reindeer Lake
South Indian Lake
Churchill L.
Granville Lake
Nelson L.
Wuskwatim L.
Burntwood R.
Paint L.
Sisipuk L.
Kississing L.
Athapapuskow L.
File L.
Reed L.
Setting L.
Yekusko L.
Cranberry L.
Cormorant L.
Mars
Kiskitto L.
Kiskittogisu L.
Ross
Flin Flon
The Pas
Moose L.
Cedar L.
Lake Winnipegosis
Mafeking
Swan L.
Swan River
Red Deer L.
Pipestone L.
Molson L.
Beaverhill L.
Clearwater L.
Oxford L.
Touchwood L.
God's L.
Goose L.
Merry L.
Ponask L.
Knee L.
Swampy L.
Bear L.
Piquitonay L.
Clearwater L.
Deer L.
Fox R.
Hayes R.
Shamattawa R.
Sturgeon L.
Beaver L.
Sipiwesk L.
Niska
Trout L.
Gunisao R.
Gunisao L.
Island Lake
Mukutawa R.
Poplar R.
Fishing L.
Berens R.
Lake Winnipeg
Gypsumville
St. Martin
Winnipegosis
Dauphin L.
Dauphin Lake
Hodgson
Riverton
Pine Falls
Balsam Bay
Pt. du Bois
Lake Manitoba
Oakfield
St. Laurent
Selkirk
Winnipeg
St. Boniface
Molson
Rennie
Marchand
Arnaud
Emerson
Gretna
Morris
Carman
Morden
Killarney
Souris
Hartney
Deloraine
Portage la Prairie
Rivers
Brandon
Virden
Minnedosa
Neepawa
Gladstone
McCreary
Russell
Gilbert Plaines
Grandview
Roblin
Sifton
Kamsack
Pine River
Canora
Sturgis
Lake of the Woods
Rainy R.
Red R.
Severn R.
Little Severn L.
Monsemshi L.
Winisk R.
Winisk L.
Trout L.
Severn L.
Lost L.
Sandy L.
Favourable L.
Attawapiskat L.
Cedar L.
Deer L.
Little Trout L.
Moose L.
Sandy L.
Cat L.
Williams L.
Lake St. Joseph
Albany R.
Whitewater L.
Whiteclay L.
Trout L.
Red L.
Lac Seul
Cliff L.
English R.
Lake Athabaska
Fond du Lac
Black Lake
Black R.
Wollaston Lake
Cree Lake
Poor R.
Fish R.
Geikie R.
Pink R.
Foster Lakes
Foster R.
Deep Bay
Reindeer R.
Loon L.
Woody L.
Lac la Ronge
Swan L.
Wasekamio L.
Turnor L.
Forbisher L.
Churchill Lake
Haultain R.
Peter Pond L.
Ile a la Crosse L.
Canoe L.
Lac la Plonge
Primrose L.
Waterhen L.
Dore L.
Smoothstone L.
Sled L.
Weyakwin L.
Wapawekka L.
Ballantyne Bay
Deschambault L.
Amisk L.
Suggi L.
Montreal L.
De Laronde L.
Cumberland L.
Meadow L.
Beaver R.
Turtle L.
Waskesiu L.
Candle L.
Torch R.
Saskatchewan R.
Prince Albert
Carrot R.
Cantyre
Melfort
Tisdale
Erwood
Naicam
Humboldt
Kelvington
Rosthern
Big Quill L.
Little Quill L.
Wynyard
Nokomis
Yorkton
Melville
Last Mountain Lake
Strasbourg
Ft. Qu'Appelle
Indian Head
Grenfell
Wolseley
Broadview
Moosomin
Elkhorn
Regina
Moose Jaw
Craik
Davidson
Outlook
Young
Sutherland
Saskatoon
Biggar
Wilkie
Unity
N. Battleford
Battleford
Manito L.
Lloydminster
Battle R.
Macklin
Kerrobert
Loverna
Alsask
Kindersley
Leader
Cabri
Herbert
Swift Current
Gull Lake
Maple Creek
Vanguard
L. Chaplin
L. Johnstone
Rouleau
L. of the Rivers
Assiniboia
Weyburn
Aneroid
Shaunavon
Willowbunch L.
Big Muddy L.
Radville
Arcola
Lampman
Oxbow
Estevan
Frenchman R.
Consul
Cypress L.
Medicine Hat
Big Stick L.
South Saskatchewan
Red Deer R.
Bow R.
Stettler
Camrose
Vegreville
Ft. Saskatchewan
North Saskatchewan
Cold L.
Beaver R.
Sand R.
Lac la Biche
Christina L.
Winefred L.
Garson L.
Clearwater R.
Waterways
McMurray
Athabaska R.
Calling
Legend L.
Namur L.
Birch R.
Peace
Lake Claire
Slave R.

The lake region is a well-watered zone north-east of the prairies. Unlike the prairies, it is well wooded. There is much good agricultural land also, while the lakes, with their abundance of splendid fish, add greatly to the wealth of the province.

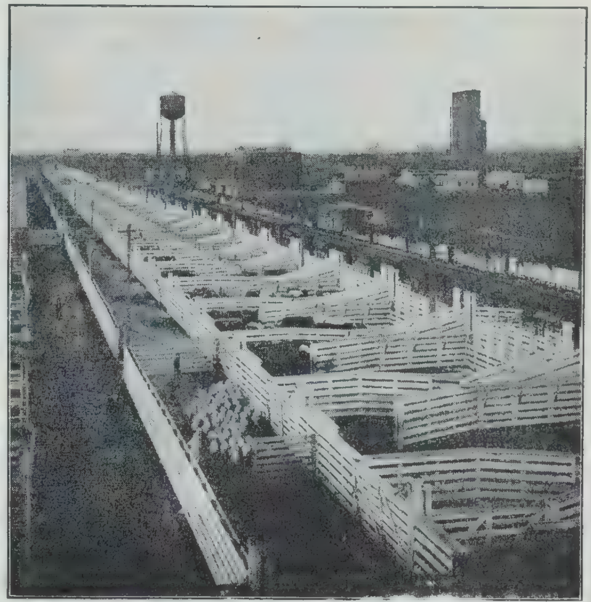
Climate.—Manitoba has a comparatively dry and clear, and so a very healthful climate. The winter, while cold, is bright and bracing; the spring and autumn are delightful; and the long, warm summer days rapidly ripen the crops. The rainfall is much less than that of Ontario, averaging only about eighteen inches a year. The rains come chiefly in June and July, and are sufficient to promote rapid growth.

Industries.—Southern Manitoba has long been famous as a wonderful wheat-growing country. The wheat is particularly good for milling into bread-flour, and the finest bread-flours in the world are made from it. Almost one-half of the cultivated land in Manitoba is planted in wheat. Oats rank next in importance. Flax, barley, rye, peas, potatoes, hay, and fodder corn are also important crops. Mixed farming, including stock-raising and dairying are of increasing importance. Fruit-growing is also making progress. Bee-keeping is a growing industry, and Manitoba honey is in great demand on account of its purity and flavor.

Fishing is an industry of some importance in Manitoba. Lakes Winnipeg and *Manitoba* are noted fishing grounds. Whitefish form the greater part of the catch, although sturgeon, pike, and pickerel are also taken. The catch is large enough to supply the needs of the province and to provide a surplus for export.

In the eastern part of Manitoba, the edge of the forest which covers North-western Ontario projects a little way into Manitoba. The province has therefore a narrow belt of forested land along its eastern boundary, which gradually widens to the north and merges into the wooded lands of the Lake region. This eastern forest strip furnishes much timber. Lumbering is also carried on in the forests of the central and northern districts. Birch, spruce, poplar, jackpine, and tamarack supply the sawmills which have been built at many points. In the south-west there are scattered timber areas on the hills and along the river banks. A huge pulp and paper mill has recently been erected at Pine Falls.

Mining in Manitoba is still in its infancy, but in the Laurentian section there is every prospect that the industry will rapidly develop. The principal metals are copper and gold, but tungsten and molybdenite are also found. The *Flin Flon* area is exceptionally rich in copper. Gypsum is obtained at *Gypsumville*, north-east of Lake Manitoba. Cement and brick are also produced, and limestone is quarried. There are deposits of soft lignite coal in the south-western part of the province, but these have been but little developed.

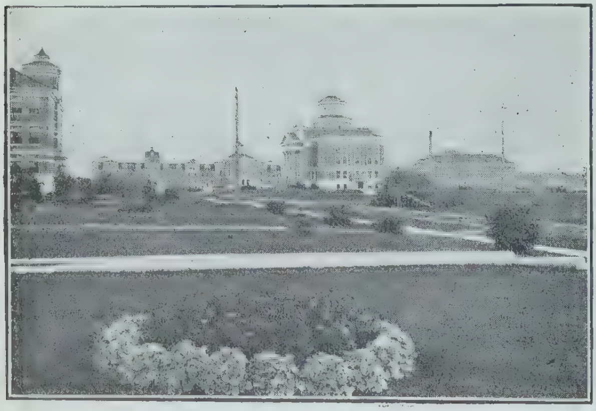


The Union Stock-yards, St. Boniface

Manitoba is mainly an agricultural country, and the total value of her manufactured products and the products of her mines, forests, and fisheries combined is much less than that of her farm crops. Yet the growth of manufacturing has been quite rapid, and Winnipeg now ranks as the fourth manufacturing city of the Dominion. Flour-milling and meat-packing, as is natural in a farming province, are important. Lime-burning and brick-making employ many hands. Wire fencing, steel products, leather goods, and clothing are also manufactured.

Transportation.—As with all the Prairie Provinces, Manitoba is well served by both the Canadian National and the Canadian Pacific Railways. The southern section of the province is particularly well provided with branch lines. *See map on page 64.*

Cities and Towns.—*Winnipeg*, the capital of Manitoba, is the only large city in the province. Its situation at the junction of the Red and Assiniboine Rivers at the entrance to the great prairie country is very favorable, as practically all commerce between the East and the West must pass through it. Its wonderful railway facilities make it the chief distributing centre for the West. Therefore, the wholesale trade of the city is enormous. It is also one of the largest grain markets in the world. The magnificent water-power near at hand has helped the city to become a prosperous manufacturing centre, with upwards of 300 factories. The largest abattoirs in the West are at Winnipeg. The water-supply of the city is piped from *Shoal Lake*, about ninety miles distant.



Part of the Buildings of the Manitoba Agricultural College

The college is a part of the University of Manitoba.

Winnipeg is noted for its educational institutions, which include the University of Manitoba and one of the Provincial Normal Schools, while within a few miles of the city are the splendid buildings of the Provincial Agricultural College and the Manitoba School for the Deaf. The public buildings of the city are also notable, especially the public, high, and technical schools. The Provincial Legislative Buildings are a distinct ornament to the city At *Transcona*, not far from Winnipeg, are located the repair shops of the Canadian National Railways.

Part of the City of Winnipeg

The building in the centre is the railway station of the Canadian National Railways. The yards are seen behind the station.

Brandon is the second city of Manitoba. It is situated on the Assiniboine River, 133 miles west of Winnipeg, in the midst of a fine agricultural country. It is the seat of Brandon College and a Provincial Normal School, while across the Assiniboine River is one of the Dominion Government experimental farms. *Portage la Prairie*, on the main line of the two great transcontinental railways, fifty-six miles west of Winnipeg, lies in the midst of a rich agricultural country known as the "Portage Plains." It has large grain elevators and flour-mills. An Indian Industrial School and the Provincial Home for Incurables are located there. *St. Boniface*, on the Red River opposite Winnipeg, is a thriving manufacturing city and the seat of St. Boniface College. *Selkirk*, on the Red River, twenty-four miles north of Winnipeg, is at the head of Lake Winnipeg navigation. It has flour-mills, a Dominion fish hatchery, and a fish storage plant.

Morden, Manitou, Carman, Carberry, Boissevain, Deloraine, Minnedosa, Dauphin, Neepawa, and *Souris* are among the railway towns which serve as shipping points for the localities in which they are located. From *The Pas* a railway is partly constructed to Hudson Bay.

Helps.—Mark the boundaries of Manitoba. What are its area and population? Describe its surface. Into which of the natural divisions of Canada does it fall? Locate carefully the various physical divisions of the province. Compare the prairie section with the northern section. Compare the first prairie steppe with the second steppe in the province. Compare the surface with that of Alberta and Saskatchewan. Of what use to Manitoba is its Lake District? Account for the fertility of the prairie section. Why is Manitoba a rich agricultural province? Compare Manitoba with Alberta and Saskatchewan as an agricultural province. What is the advantage of having such a long coast-line on Hudson Bay? What is the advantage in a railway to Hudson Bay? What are the natural resources of Manitoba? What industries has the province? Mark on a map the chief railways of the province. Account for the commercial prominence of Winnipeg. Why are there no other large cities in Manitoba?

ONTARIO

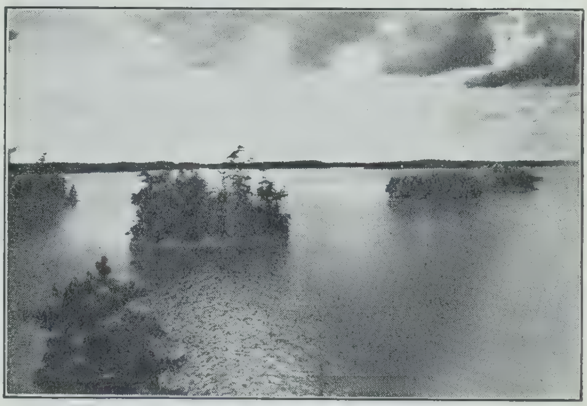
Area and Population.—The province of Ontario, is, in respect to size, the second province in the Dominion. It is over 1,000 miles in its greatest length, nearly 900 miles in its greatest width, and comprises a territory of more than 407,000 square miles—an area three and a third times as great as that of the British Isles. The eastern boundary of the province is more than 1,000 miles from the open Atlantic. The western boundary lies to the west of the centre of the continent. Along Hudson Bay and James Bay the province touches salt water for a distance of 600 miles, while on the south the shore-line along the Great Lakes and their connecting rivers measures at least 1,600 miles. Ontario has also a right of way five miles in width through Manitoba, from the provincial boundary to Port Nelson.

Three-quarters of the people of Ontario are of Canadian birth, largely of British ancestry. In certain sections of the province there is a considerable number of French-Canadians. Most of the inhabitants not born in Canada have come from the British Isles. There is a sprinkling of other nationalities as well, every country in Europe being represented to a greater or a less degree. Within the province there are several large Indian reservations which have a population exceeding 25,000.

Surface.—The whole of Ontario is a broad, rolling plain, without any prominent elevations marking its surface. The northern part of the province is included in the Laurentian Plateau and the southern part in the Lowlands of the St. Lawrence. *See pages 45 and 37*. The northern section is generally known as *Northern Ontario*, while the southern part is usually spoken of as *Southern Ontario*.

Southern Ontario, the wedge-shaped portion of the province which lies south of Lake Nipissing between Lakes Huron, Erie, and Ontario and the Ottawa River, is one of the most beautiful and prosperous districts in the British Empire. The rolling land of fertile clay or sandy loam is, in the main, admirably adapted for farming.

The only surface feature of note in Southern Ontario is the *Niagara escarpment*, which traverses the province from Queenston Heights to the western corner of Georgian Bay close to *Owen Sound*. The escarpment faces towards the north and east and is well marked throughout its length. It divides Southern Ontario into two plains. The lower eastern plain lies between the escarpment and the Ottawa River, the higher western plain slopes gently down to the shores of Lake Erie and Lake Huron from the top of the escarpment.


Venetia Islands, Muskoka Lakes, Ontario

Northern Ontario is, for the greater part, a vast region of forest, mineral lands, lakes, and rivers. The timber supply, despite great annual cuts and heavy losses from fires, is still very large, while the amount of pulpwood available is enormous. The mines are even now producing in immense quantities, although the mineral lands of the north are as yet largely unexplored or undeveloped. In addition to these resources, Northern Ontario possesses one of the finest areas of virgin land in the world. This is the *Great Clay Belt* to the south of James Bay. The Clay Belt is a region of 16,000,000 acres of fine farming land, which, when cleared of its heavy growth of pine, spruce, and poplar and brought under the plough, will easily support a population as large as the present population of the whole province.

Climate.—Southern Ontario, owing to its latitude and the influence of the Great Lakes, has a comparatively mild climate. Neither the summers nor the winters are so extreme as in many districts farther to the south. Farther north, the climate is much more severe, and summer frosts are not unknown. Still farther north, however, the moderating influence of Hudson Bay is felt, so that in the Great Clay Belt the winters are milder than they are around Lake Superior. On the whole the summers of Ontario are delightful. There are few days when the heat is very oppressive, and the nights are usually cool. The winters are dry and exhilarating. The snowfall is usually heavy. The rainfall, averaging thirty to forty inches annually, is abundant at all seasons.

Courtesy of the Department of the Surveyor-General, Ottawa

Fighting Forest Fires by the Aid of an Aeroplane

Industries.—Southern Ontario is the agricultural section of the province. Oats, wheat, barley, corn, hay, and potatoes are the staple crops. The growing of grain and vegetables, however, is not by any means the sole occupation of the Ontario farmer. Stock-raising and dairying are the back-bone of the industry, and the fodder crops and much of the grain crop are fed to the stock. Ontario raises excellent horses, cattle, sheep, and swine. Within the province is produced nearly two-thirds of the cheese and one-third of the creamery butter made in Canada.

Fruit-growing is now an important branch of agriculture in the province. Apples are grown almost everywhere. The great fruit-growing section, however, is practically confined to the country bordering Lake Erie and the western end of Lake Ontario. There apples, peaches, pears, plums, cherries, grapes, currants, raspberries, and strawberries are cultivated with splendid results. Vegetables are also grown in great quantities in this district. Large canning factories, which handle both fruit and vegetables, are found in many centres. Tobacco culture is a growing industry along the Lake Erie shore.

Ontario stands easily first among the provinces in respect to the value of mineral production. Almost all the minerals of economic importance, with the single exception of coal, are found in Ontario. The silver mines of Cobalt have proved to be exceptionally rich, while other districts, such as *Gowganda*, also contain promising deposits of silver. The gold mines at Porcupine include one of the largest in the world. Gold ores in immense quantities are being found in other widely separated districts in the northern section of the province.

Ontario ranks first among all the nickel-producing countries. In fact, the nickel mines at Sudbury control the world's market for this metal. Copper is found in the same district. In the country north of Lake Superior and in the *Rainy River* district there are extensive deposits of iron ore. The largest iron mine in Canada is at Michipicoten. Among the mineral products other than metals are petroleum, natural gas, salt, gypsum, feldspar, arsenic, and stone and clay products.

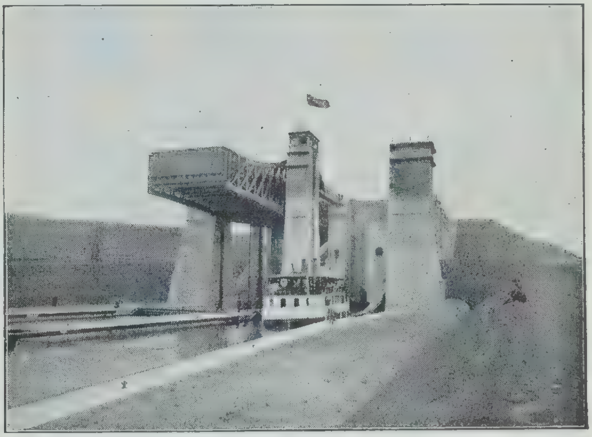
The forest-lands of Ontario contain great forests of red and white pine, which are valuable timber trees, as well as very large areas of spruce, balsam, fir, hemlock, jack-pine, and poplar, suitable for pulpwood. Besides these there are many other varieties of valuable trees; oak, beech, maple, elm, basswood, and cedar are fairly abundant, especially in the wood lots which still dot the farms of Old Ontario. The most important lumbering districts are on the Upper Ottawa, to the west of Lake Superior, and to the north of Georgian Bay. One of the largest news-print mills in the world is at Sault Ste. Marie, and many other pulp and paper mills, such as those at *Iroquois Falls*, are operated in Northern Ontario.

The Ontario government has set aside as a forest and game preserve a tract of 2000 square miles known as Algonquin Park. The park presents all the native beauty of a Canadian northland forest, unmarred by the hand of man. Its lakes and streams teem with bass and trout; the woods are alive with moose, deer, and beaver; while thousands of wild fowl and other birds nest within its confines. The timber is carefully guarded and is allowed to be cut only under the strictest supervision.

The fresh-water fisheries of the province, which include the Great Lakes, Lake Nipissing, Lake Nipigon, and Lake of the Woods, are very valuable. Herring, whitefish, and trout are the principal varieties sought, but the catch includes pike, pickerel, sturgeon, eels, perch, catfish, carp, and other coarse fish.

Ontario is fortunate in not being dependent upon coal alone to turn the wheels of her factories. Close to the great industrial section of the province is *Niagara Falls*, where electric power is now being generated. All over the province are many falls and rivers which are being used for a similar purpose. Blessed with an abundance of raw materials from field, forest, and mine, with unsurpassed transportation facilities, and with this cheap and widely distributed power, Ontario is well equipped for manufacturing. There are more than 9,000 factories in operation. Almost every village has its manufacturing plant of some size and importance. Nearly every class of goods on the Canadian market is manufactured within the province. The chief are iron and steel products, electrical apparatus, agricultural implements, vehicles of all kinds, pianos, food products—flour, oatmeal, canned goods, and meat products—textiles and clothing, leather goods, boots and shoes, pulp and paper, brick, cement, glass, and wood products of all kinds.

Transportation.—Southern Ontario has a perfect network of railways, and Northern Ontario is being rapidly opened up by new lines. The chief railways are the main lines of the *Canadian National* and the *Canadian Pacific* systems and their numerous branches.


The Hydraulic Lift-lock at Peterborough, Trent Canal

The *Timiskaming and Northern Ontario Railway*, owned and operated by the Ontario government, runs from *North Bay* to *Cochrane*, where it meets the National line. Several American railways, such as the *Michigan Central* and the *Pere Marquette* enter the province from the south.

The main waterway of the province is formed by the Great Lakes, with their connecting rivers. *See page 39.* In addition to the canals of the St. Lawrence and Great Lakes route, there are two important canals in Ontario. The *Rideau Canal* connects Ottawa with Kingston; and the *Trent Valley Canal*, from Trenton through the *Kawartha Lakes* to Georgian Bay, provides a short cut through the heart of the province from Lake Ontario to Georgian Bay. Besides these, the *Murray Canal*, only a trifle over five miles long, separates the peninsula of Prince Edward County from the mainland.

Cities and Towns.—*Toronto*, situated on a spacious harbor of Lake Ontario, is the capital. It is the largest city of Ontario and the second in size in the Dominion. The city is noted for its splendid residential sections of well-built homes, spacious lawns, and fine old trees. There are many public parks which add greatly to the beauty of the city. The Legislative Buildings, the University of Toronto, the City Hall, and the General Hospital are among the finest of the public buildings. The city is a great distributing centre. Its harbor is one of the best in Canada. Its industries include foundries, ship-building yards, meat-packing establishments, implement factories, railway shops, and many others of less importance.

Yonge Street, Toronto, Looking North

Hamilton, beautifully situated on a magnificent land-locked harbor at the western extremity of Lake Ontario, is the second city of the province. Behind the city is the Niagara escarpment, which there closely approaches the lake. Surrounding it is one of the finest fruit districts in North America. Hamilton is essentially a manufacturing city, with several large industrial plants.

Ottawa, the third city of the province, is picturesquely situated on a cluster of hills overlooking the Ottawa River. The Dominion Parliament Buildings and Government offices give an air of dignity to the city, and millions of dollars have been spent in improving its parks, driveways, and general appearance. The University of Ottawa is located there. Lumbering is the chief industry.

London, on the *Thames River*, lies midway between Toronto and Detroit. Its situation in a fine agricultural district and its good railway facilities make it an important industrial centre. It has many manufactures. Western University has its seat there. *Brantford*, on the *Grand River*, is also the centre of a prosperous agricultural country. Agricultural implements and machinery are the chief manufactures. The city is the seat of the Ontario Institute for the Blind.

Windsor, on the Detroit River, is a thriving city with many flourishing industries, including those connected with the manufacture of tobacco, salt, automobiles and automobile accessories, and wire fencing. The separate municipalities of *Sandwich*, *Walkerville*, *Ford*, and *Ojibway* form a continuous city with Windsor, and the whole group is known locally as the *Border Cities*.

Kingston, near the eastern end of Lake Ontario, is the seat of Queen's University and the Royal Military College. *Peterborough* is on the *Otonabee River*, which provides electrical power for many factories. Both Kingston and Peterborough have large manufacturing interests.

St. Catharines and *Welland*, on the Welland Canal, and *Niagara Falls*, situated near the falls of the Niagara River, are distributing centres for the productive agricultural district of the *Niagara Peninsula*. All, too, have several large industries.

Kitchener, *Galt*, *Guelph*, *Woodstock*, and *Stratford* are busy cities in the heart of the *Lake Peninsula*; all produce a large output of manufactured goods of many kinds. At Guelph is located the Ontario Agricultural

College and Experimental Farm. In Stratford are large National Railway shops.

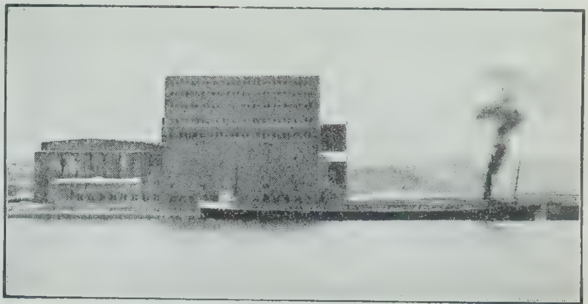
St. Thomas and *Chatham* serve as distributing and marketing centres for the counties on the western shore of Lake Erie. The Michigan Central Railway maintains large construction and repair shops in St. Thomas. Chatham is at the head of navigation on the Thames River, and enjoys the advantages of a lake port. Both cities have large manufacturing plants.

Belleville, on the Bay of Quinte, *Sarnia*, on the St. Clair River, and *Owen Sound*, on Georgian Bay, are lake ports of importance. At Belleville is located the Provincial School for the Deaf. At Sarnia is the St. Clair tunnel, which connects the railway systems of Ontario and Michigan. Owen Sound has one of the finest harbors on the Upper Lakes. These three cities are also manufacturing and distributing centres, as is *Oshawa*, on Lake Ontario. Oshawa has a large automobile industry.

Cornwall and *Brockville*, on the St. Lawrence River, and *Smith's Falls*, an important railway junction, are among the larger manufacturing towns of Eastern Ontario. *Goderich*, on Lake Huron, and *Collingwood* and *Port McNichol*, on Georgian Bay, are all busy lake ports. *Barrie* and *Orillia*, on Lake Simcoe, and *Lindsay*, on the *Scugog River*, are thriving towns in Southern Ontario.

In Northern Ontario the twin cities of *Fort William* and *Port Arthur* are of prime importance. They are situated on *Thunder Bay*, at the head of navigation on Lake Superior. Fort William is the lake terminus of the Canadian Pacific Railway. Both cities are terminal points for lines of the Canadian National Railways. They have immense elevators for handling the grain from the western provinces. Both cities are well supplied with power and are progressive manufacturing centres.

Sault Ste. Marie, on the St. Mary River, has several large iron and steel plants and pulp-mills. Cheap power is provided by the river, while the ore and spruce in the neighborhood furnish abundant raw material. *North Bay*, on Lake Nipissing, is an important railway junction and the gateway to the north country. *Sudbury*, *Cobalt*, and *Timmins* are mining towns of Northern Ontario, and still farther north is *Cochrane*, the centre of the fertile Clay Belt. In the extreme west of the province is the thriving town of *Kenora*.



Courtesy of Canadian National Railways

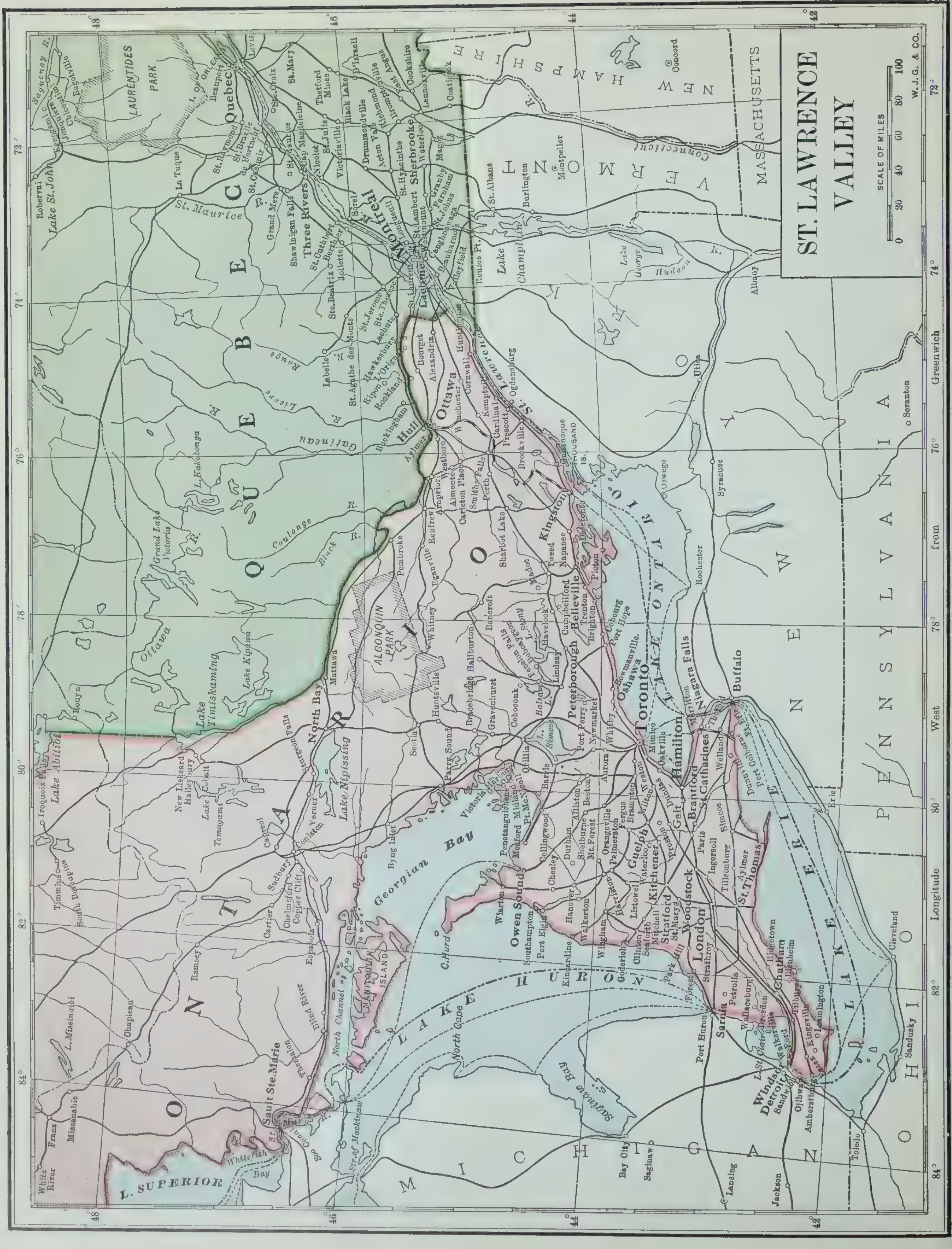
The largest Grain Elevator in the World, Port Arthur

Helps.—Mark on a map the boundaries of Ontario. What are the area and population? Compare in these respects with Quebec. Describe the surface of the province. Compare the surface of Southern Ontario with that of Northern Ontario. Within what natural divisions of Canada does Ontario fall? Mark these on the map. What are the natural resources of Northern Ontario? Of what use is the northern section of the province to the province as a whole? What advantage is there to the province in having a coastline on Hudson and James Bay? If the railway were extended to James Bay, what commercial advantages would result? Why has Ontario a five-mile strip through Manitoba to Port Nelson? Mark the railways of Ontario on the map. Which are colonization lines? Of what use are the Great Lakes and the St. Lawrence to Ontario? If the St. Lawrence canals were deepened what effect would this have on Ontario? Trace on the map the drainage basins of Ontario, and name the chief rivers in each. Describe the Muskoka District. Describe Algonquin Park. Locate the principal canals in Ontario. What is the reason for each?

What are the natural resources of Ontario? Compare with those of Quebec. Compare the water-power of Ontario with that of Quebec. What use is made of water-power in Ontario? Show the relationship of the natural resources to the industries. Why is Ontario such a great manufacturing province? Account for the commercial importance of Toronto, Hamilton, and Ottawa. Name and locate the other cities of Ontario and account for their growth. What effect has the location of Ontario on its trade generally?

QUEBEC

Area and Population.—The province of Quebec lies along both banks of the St. Lawrence for almost its entire length. On the north it touches on Hudson Bay and Hudson Strait. From east to west it extends


ST. LAWRENCE VALLEY
SCALE OF MILES
0 20 40 60 80 100
W. J. G. & CO.
Longitude West from Greenwich
48° 46° 44° 42°
84° 82° 80° 78° 76° 74° 72°
QUEBEC
ONTARIO
NEW YORK
PENNSYLVANIA
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
MICHIGAN
OHIO
LAURENTIDES PARK
ALGONQUIN PARK
L. SUPERIOR
LAKE HURON
Georgian Bay
LAKE ONTARIO
LAKE ERIE
Lake Nipissing
Lake Timiskaming
Lake Abitibi
Lake St. John
Lake Champlain
Saginaw Bay
MANITOULIN ISLAND
North Channel
St. Lawrence R.
Ottawa R.
St. Maurice
Gatineau
Hudson R.
Connecticut R.
Quebec
Three Rivers
Montreal
Sherbrooke
Ottawa
Hull
Kingston
Belleville
Peterborough
Toronto
Hamilton
Niagara Falls
St. Catharines
Brantford
Guelph
Kitchener
Stratford
Woodstock
London
St. Thomas
Chatham
Sarnia
Windsor
Detroit
Owen Sound
North Bay
Sault Ste. Marie
Sudbury
Buffalo
Rochester
Syracuse
Utica
Albany
Toledo
Cleveland
Erie
Sandusky
Bay City
Saginaw
Lansing
Jackson
Burlington
Concord
Scranton

for a distance of nearly 1,000 miles, from north to south for about 1,200 miles. It is the largest province of Canada and has almost five times the area of the British Isles.

About four-fifths of the people are descendants of the original French settlers and speak French as their native tongue. The remaining fifth, mainly of British descent, are found chiefly in the cities and in the Eastern Townships.

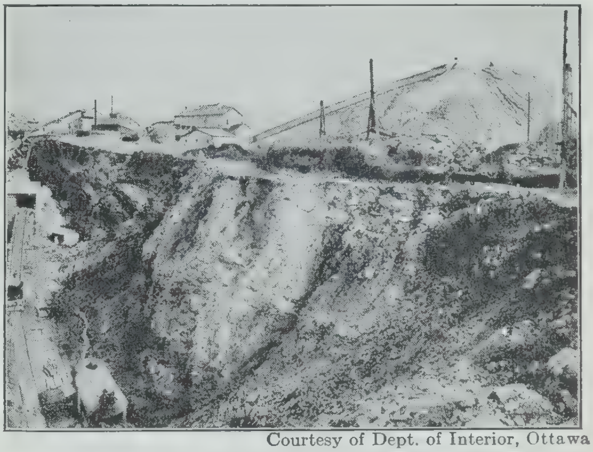
Surface.—Quebec falls naturally into three well-marked areas: the *Lowlands of the St. Lawrence* along the river from a short distance east of the city of Quebec to the western extremity of the province; the *Laurentian* area to the north of the Lowlands, and extending to Hudson Bay; and the *Appalachian* area in the south-eastern part south of the St. Lawrence. Both the surface and the drainage of the province have already been described. *See pages 31 to 51.*

Climate.—The climate of Quebec is extremely varied, as, indeed, must be the case in a province of such great extent. In the valley of the St. Lawrence the summers are hot. Below Quebec the summers are moderated by proximity to the cold waters of the gulf, and in this area spring is later than it is farther to the south-west. All over the province the winters are cold, with a heavy snowfall. For about five months of the year the St. Lawrence River is icebound.

Industries.—Southern Quebec is one of the best agricultural districts of Canada. Hay, oats, potatoes, turnips, and wheat are the most valuable crops, but corn, barley, buckwheat, beans, peas, and rye are also largely grown. Dairy products are a very important item in the total farm production, and stock-raising is a growing industry. Apples, plums, and melons are the chief fruits grown. Quebec is the banner maple-sugar province of the Dominion. Almost every farm has its maple-sugar bush.

The timber trade follows agriculture in importance. In the north the predominant trees are pine, spruce, and fir, while farther south are maple, oak, elm, and other hardwoods. Much of the timber cut in the north is made into pulp and subsequently into paper. There are large pulp and paper mills at many points. Only a very small part of the immense forest area of the province has as yet been touched.

The mineral resources of Quebec are as yet little known. At present the most valuable commercial mineral is asbestos, with which Quebec practically supplies the whole world. Copper, magnesite, mica, molybdenite, and feldspar are also mined. Ochre, which is used in the manufacture of paint, is mined near Three Rivers. The value of the output of cement is very large. The gold and copper mines of Rouyn, near the Ontario border in Northern Quebec, promise to be very valuable.



Courtesy of Dept. of Interior, Ottawa

An Asbestos Mine at East Broughton, Quebec

Fishing is an important industry along the shores of the St. Lawrence and in the gulf. In many cases the *habitants* along the St. Lawrence River combine fishing with farming. The chief fish caught are salmon, cod, herring, and mackerel.

Quebec ranks second to Ontario in the amount and value of its manufactures. The abundance of water-power almost everywhere in the province compensates for the absence of coal. The chief manufactures are sugar, woollen and cotton goods, boots and shoes, pulp and paper, tobacco and cigars, furs and hats, machinery, railway cars, musical instruments, cutlery, rifles, and gunpowder.

Transportation.—Like Ontario, Quebec is well provided with railways. The Canadian

National and the Canadian Pacific serve all the important points and give the province connection with both the East and the West. Branch lines are numerous. *See map on page 64.* The ports of Montreal and Quebec give communication with the outside world.

Cities and Towns.—*Quebec*, the provincial capital, is perhaps the most interesting of all Canadian cities, and certainly is the most picturesque. Upon the bold and precipitous height of *Cape Diamond*, crowned with the ancient citadel of Quebec, is built the Upper Town, while the Lower Town—the older portion of the city—spreads over the base of the promontory. The modern city contains many splendid buildings, among which may be mentioned the Legislative Buildings, the Court House, the City Hall, and the imposing structures of Laval University.

Market Day, Quebec City

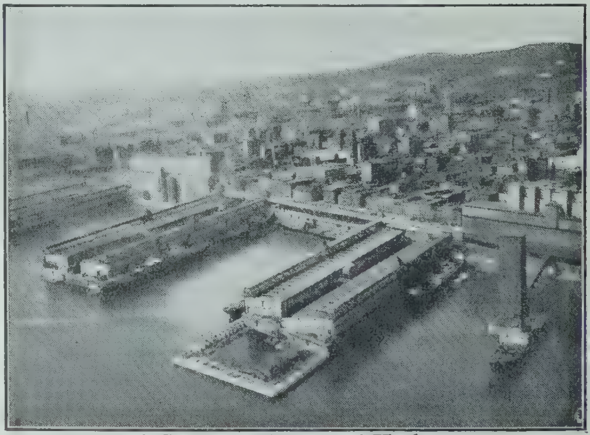
The harbor of Quebec is large enough to hold a navy and deep enough to float the largest vessels built. The city is the headquarters for the export of timber. Across the St. Lawrence from Quebec is *Levis*, which has one of the largest dry-docks in the world. Not far distant on the north bank of the St. Lawrence is the celebrated shrine of *Ste. Anne de Beaupré*, which is yearly visited by thousands of pilgrims.

The *Falls of Montmorency* provide electricity for the city's use. The manufactures are varied and important, including leather goods, lumber, boots and shoes, furs, and tobacco.

Montreal is built upon the east side of Montreal Island, which lies in the St. Lawrence at its confluence with the Ottawa River. The city stretches for miles along the river front, while behind it rises the beautiful *Mount Royal*—a fitting background for a noble city. The buildings are largely of limestone, quarried from Mount Royal. The harbor is well provided with docks and with facilities for the handling of incoming and outgoing products.

Montreal is not only the commercial centre, but it is also the chief manufacturing city of the Dominion. The car shops of both the Canadian National and the Canadian Pacific are located there. Educationally, also, the city is of great importance. It is the seat of both McGill University and the University of Montreal. Its public buildings include many churches, hospitals, and charitable buildings, while it has a number of imposing monuments. At *Ste. Anne de Bellevue*, near the city, is Macdonald College, one of the best equipped agricultural colleges in Canada. *Westmount*, lying side by side with Montreal, is peculiarly a residence city. Other suburbs are *Outremont*, *St. Henri*, and *Verdun*.

Hull is built upon the north bank of the Ottawa River opposite the city of Ottawa. Its inhabitants are employed mainly in the manufacture of wood products, such as lumber, wood-pulp, paper, woodenware, and matches. The Chaudière Falls of the Ottawa River supply electric power for the lighting of the city and for its street railway, as



A Section of Montreal Harbor

well as for the use of its factories. *Sherbrooke*, the chief city of the Eastern Townships, rivals Hull as an industrial centre. Its cotton and woollen mills and its machine shops are operated by power obtained from the *St. Francis River*. These are among the largest and best in Canada. The city is the centre of a rich agricultural country.

Three Rivers, Sorel, St. Hyacinthe, Valleyfield, and *Shawinigan Falls* are among the smaller cities which contribute to Quebec's manufacturing output.

Helps.—Mark on a map the boundaries of Quebec. Compare it in area and population with Alberta. In what natural divisions of Canada does it lie? Mark these accurately on the map. Name the principal mountain ranges. What is the effect of these on the province? Trace on the map the chief rivers. What is the commercial importance of each? What would be the effect on Quebec if the St. Lawrence flowed through the province 100 miles to the northward? What would be the effect if the St. Lawrence were navigable only a hundred miles from its mouth? Of what advantage is Northern Quebec to the province? What is the value of the coast-line on Hudson Bay? What effect has the enormous water-power on the industries? What would be the effect if water-power were not available? Locate some of the chief water-powers. What are the principal natural resources? How are these related to manufacturing? Why is Montreal Island so suited to agriculture? Is Quebec a mining province? Why? Compare Quebec with New Brunswick as a lumbering country. Give four reasons for the commercial importance of Montreal. Why is the city of Quebec such a leading manufacturing city? Locate six other important manufacturing centres. Of what value to the province are Shawinigan Falls and the Falls of the Montmorency?

NEW BRUNSWICK

Area and Population.—The province of New Brunswick is almost square in shape, stretching for 180 miles from north to south and for 190 miles from east to west. About 100,000 of its population are of French descent, the remainder, with the exception of a few hundred Indians, are of Canadian birth and British ancestry.

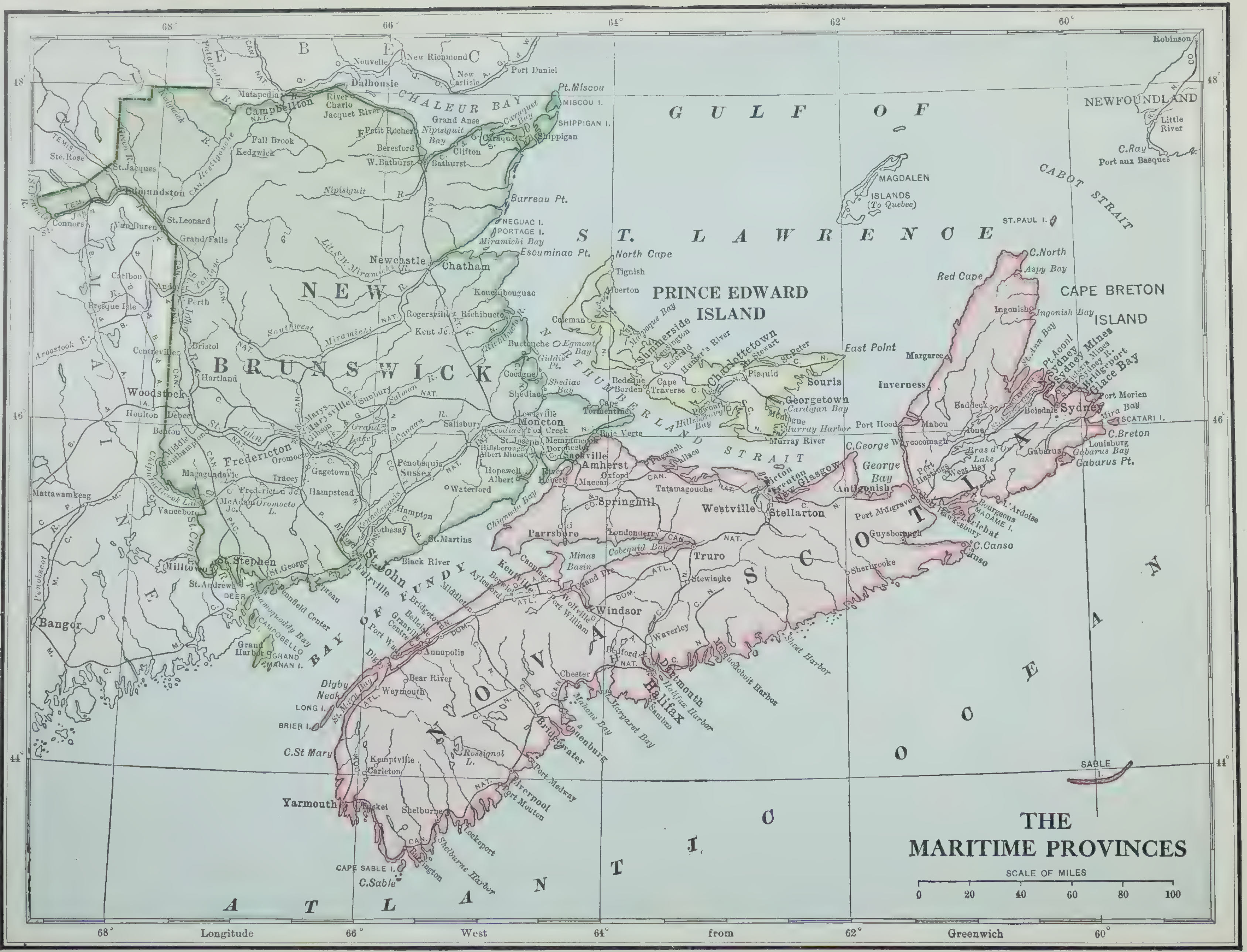
Coast-Line.—The coast-line along the Bay of Fundy, though rugged, is much lower than the Nova Scotia coast across the bay. There are many excellent harbors, of which the best are those of St. John and St. Andrews. The Gulf of St. Lawrence shore is also well supplied with harbors. Chaleur Bay is everywhere navigable and has not a rock, reef, or shoal over its entire extent. *Bathurst* is situated on the best of its several harbors.

Surface.—New Brunswick is a province of rolling land. The only hills of considerable size are found in the wild and broken country about the watershed which separates the rivers flowing into the Gulf of St. Lawrence and the headwaters of the St. John and the Restigouche Rivers. About one-quarter of the total area consists of rough, rocky tracts and forests. The remainder is good arable land. The alluvial lands of the river valleys and the low-lying marsh-lands at the head of the Bay of Fundy are extremely fertile.

New Brunswick is the best-watered country in the world, containing an unusual number of rivers which terminate at their mouths in estuaries, forming good harbors. The rivers, in general, have cut wide valleys, which consist of low, alluvial lands, usually flooded in spring. *See page 32.* The valleys are clothed with hardwoods. The land, when cleared, is very rich and easily worked.

A Fox-Farm, New Brunswick

Climate.—The climate of New Brunswick is healthful and invigorating. Although the sea is on three sides of the province, the air is not so humid as might be expected, and the heat and cold are not so trying as in moister climates. The snowfall is heavy and greatly aids lumbering. The warm, but not necessarily hot, summers favor the rapid growth of vegetation, including trees,



THE MARITIME PROVINCES

and permit the successful cultivation of all the fruits and cereals of the Temperate Zone.

Industries.—The principal crops grown are wheat, oats, hay, buckwheat, and root crops. Of these, oats, hay, and potatoes are the staples. The meadows and pasture-lands are favorable to stock-raising and dairying. Fruit-culture, though as yet in its infancy, is progressing. Within recent years fox-farms have been established.

The coast of New Brunswick, 600 miles long, offers splendid facilities for sea-fishing. The principal fish caught are cod, herring, haddock, salmon, and shad. It is worth noting that the province has the only sardine cannery in Canada.

New Brunswick is known to be rich in minerals, but only three mining industries are as yet upon a commercial basis—coal mining, gypsum quarrying, and stone quarrying. Coal is found in many districts and lies quite close to the surface. Natural gas is being produced in increasing quantities near Moncton and provides that city with light and fuel.

The forest-lands of New Brunswick produce timber of many kinds, principally spruce, fir, pine, birch, cedar, maple, beech, and hemlock. The manufacture of these woods into sawn lumber, laths, shingles, pulpwood, poles, and railway ties requires a large number of mills.

In addition to the saw-mills and pulp-mills, there are many other industrial plants of various kinds. Among the most important of these are the sugar refineries at St. John; cotton-mills at St. John, Moncton, and *Marysville*; boot and shoe factories at *Fredericton;* stove foundries at *Sackville*; fish and lobster canneries at Chatham; and many wood-working and furniture factories in the various towns of the province.

The province possesses excellent water-powers, which await only development to give an additional impetus to the growth of manufacturing. The *Grand Falls*, on the St. John River about 225 miles from its mouth, are almost a second Niagara.

Transportation.—The province is served principally by the lines of the Canadian National Railway, while the Canadian Pacific connects St. John with Montreal. Branch lines connect all the important centres.

Cities and Towns.—*Fredericton*, the capital, is built upon the St. John River, eighty-four miles from its mouth. It is the seat of the government, the commercial centre of the interior, and an important lumber and manufacturing place. In the city are the Legislative Buildings, the Provincial University, and the Provincial Normal School. The harbor of *St. John* is deep, sheltered, and free from ice at all seasons. The city possesses wharf and elevator facilities and has a large number of factories. It has rail connection with every part of the North American continent, and steamship communication with almost every port of the world. The magnificent new dry-dock, 1150 feet in length, is the largest in the world.

The Harbor of St. John, New Brunswick

Moncton, the second city in size, is situated on the Petitcodiac River. It is a railway city and has large textile mills and many other important industries. *Chatham*, on the Miramichi River, is a centre of the lumber and fishing industries. *Dalhousie*, at the head of Chaleur Bay, has a good harbor and is a shipping port for the lumber floated down the Restigouche. It is also a well-known summer resort. *St. Stephen*, on the St. Croix River, has large lumbering interests, and *Milltown*, adjoining it, is noted for its colored cottons. *Marysville* has one of the largest cotton-mills in Canada.

Helps.—Mark on an outline map the boundaries of the province. Compare it in size and population, with Alberta. In what physical region does it lie? What is its relationship to the Appalachian Highland? Describe the surface. Locate on the map the principal rivers. What is the importance of each? Of what use are the rivers commercially? Compare the rivers with those of Quebec? Trace the coast-line. What is the importance of the coast-line? What effect has the Bay of Fundy on the province? Describe the tide in the Bay of Fundy. Account for this. If there were a mountain range along the east coast, what effect would this have on the climate and the industries? What are the chief natural resources? What are the manufactures? Why? What use is made of water-power? What is the advantage in the large extent of forest-land? What is the importance of the harbor of St. John? Locate the most important places. What is the importance of each?

NOVA SCOTIA

Area and Population.—The province of Nova Scotia consists of two distinct sections—the peninsula of Nova Scotia proper and the island of Cape Breton. The peninsula is about 270 miles long and varies from sixty to one hundred miles in width; the island is a little over a hundred miles long and of very irregular breadth.

The majority of the people are of Canadian birth and of British ancestry. There are also in the province many descendants of the original French settlers. About 2,000 Micmac Indians still remain, but few of them are pure-blooded Indians.

Salt-Marsh Hay near Kentville, Nova Scotia

Coast-Line.—Except for the *Isthmus of Chignecto*, only twelve miles wide at its narrowest point, the province is surrounded on all sides by salt water. The Atlantic coast is low and rocky, and studded with many rocky islets. It is very irregular, and there are many good harbors, some of which are capable of sheltering the largest ocean vessels. The coast of the Bay of Fundy is bordered by a cliff several hundred feet high, which is almost unbroken save for a few long inlets, such as *Annapolis Basin* and *Minas Basin*. The northern coast is low and possesses several harbors. The best of these is that of *Pictou*.

Surface.—Nova Scotia lies entirely within the Appalachian Region. *See page 31.* It is divided into two nearly equal parts by a range of hills, running through the entire length of the peninsula. The part sloping towards the Atlantic, is, in general, rocky, dotted with many lakes and intersected by numerous streams. The whole area is forested. The only agricultural land is found along the river valleys.

The northern slope towards the Bay of Fundy and the Gulf of St. Lawrence is quite different. There are ranges of hills, covered with beech, maple, and other hardwoods, running parallel to the coast-line. Both hills and valleys are covered with deep, rich soil, and, when cleared, make fine farms. There are broad flats around the head of the Bay of Fundy, which, when diked, produce enormous crops of hay. These meadows require no fertilizing to maintain their productive power.

The deep *Strait of Canso* separates the peninsula from Cape Breton Island. The surface of the southern part of the island is low and level, but the northern part is rugged and mountainous. A canal leads from the open sea into the beautiful *Bras d'Or Lakes* and the interior of the island.

Owing to the narrowness of the peninsula, the rivers of Nova Scotia are small. They are, however, very numerous and provide the province with water-power. Many are tidal rivers, in which the influence of the tide is visible right to their headwaters.

Climate.—The climate is healthful and invigorating, despite the fogs which are prevalent at certain seasons along the Atlantic coast. The rainfall is abundant, averaging about forty-four inches a year.

Industries.—Fishing is one of the chief industries. The principal fish caught are cod, haddock, herring, and mackerel. Lobsters are trapped along the coast. Most of the codfish are dried. The haddock and other fish reach the inland cities of Canada either fresh or smoked.

The climate and soil of Nova Scotia are suited to the cultivation of fruits and cereals. The apple is the king of fruits in the province, especially in the *Annapolis Valley*. Peaches, plums, pears, and cherries are also grown. Oats take the leading place among the cereals, closely followed by wheat, barley, and buckwheat. Potatoes and root crops generally do well. The abundance of hay from the tidal meadows encourages stock-breeding and dairying.

Nova Scotia contains much mineral wealth. Coal fields are worked in Cumberland and Pictou counties. More important are the Cape Breton mines, which produce three-quarters of the total output of the province. Iron ore is very cheaply mined and easily imported from Newfoundland, so the manufacturing of iron and steel is one of the leading industries. Other minerals of less importance are also found. A little gold is taken from the rocks of the rough Atlantic section. Gypsum is mined in Cape Breton Island and near Minas Basin. Salt is mined in Cumberland county.

More than half of the total area of Nova Scotia consists of good forest-lands, containing tamarack, spruce, and fir, as well as hardwoods, such as ash, beech, birch, and maple.

The manufacturing establishments of the province include sugar refineries, textile and boot and shoe factories, tanneries, pulp and paper mills, machine shops, and factories for agricultural implements. The iron works of Sydney and *New Glasgow* are the most important of all.

Transportation.—The lines of the Canadian National Railways connect all the leading centres and give communication with New Brunswick and with the provinces farther west. There are many branch lines. The Dominion Atlantic Railway from Truro to Yarmouth is operated by the Canadian Pacific Railway. *See map on page 64.*

Cities and Towns.—*Halifax,* the capital and chief city of the province, is built upon a fortified hill, which projects into a fine natural harbor fourteen miles long, and nowhere less than thirty-six feet in depth. Across the mouth of the harbor lies Macnab Island, also heavily fortified. The harbor is free from ice at all seasons. From this port there is a large export trade in fish, lumber, and agricultural products. Among its manufactures are agricultural implements, woollens, cottons, and chocolate. It contains the Provincial Legislative Buildings, Dalhousie University, the Nova Scotia Technical College, and the Provincial Institutions for the Blind and for the Deaf. The Public Gardens are the admiration of all visitors to the city. Across the harbor from Halifax is *Dartmouth,* a prosperous manufacturing town. Near by are large sugar and oil refineries.

View of Halifax Harbor from the Citadel

Sydney ranks next in importance to Halifax. It is built on one of the finest harbors in Canada and is the great coal-shipping port of the Dominion. The huge works of the British Empire Steel Corporation are located there. Other coal-mining centres are *Glace Bay*, *Sydney Mines*, *New Glasgow*, and *Springhill.* *Amherst* is noted for its car and machine shops, and its furniture and boot and shoe factories. *Pictou,* in the north, and *Yarmouth,* in the south, both have considerable shipping trade. *Digby* is a seaport town, with large fishing interests. *Lunenburg* is a fishing port, sending out 150 vessels to the cod fisheries on the Banks. *Truro* is picturesquely situated at the head of *Cobequid Bay*, in the midst of a fine agricultural country. The Provincial Normal School and the Provincial Agricultural College are both located there. *Windsor, Wolfville, Shelburne,* and *Antigonish* are other smaller towns.

Sydney Harbor, Nova Scotia

Helps.—Mark on an outline map the boundaries of Nova Scotia. Locate it in the Appalachian Highland. Compare its area and population with those of Alberta. Trace the coast-line. Name and locate the most important coast features. Compare the Atlantic coast with that of the Bay of Fundy. What effect has the coast-line on the prosperity of the province? What are the advantages of such an irregular coast-line? Compare the coast-line with that of New Brunswick. Locate the principal harbors. Note carefully the mountain ranges. What effect have these on the climate? Compare the rivers of Nova Scotia and New Brunswick. Why the difference? Locate the most fertile regions. Why are they so fertile? Describe the surface of Cape Breton. What advantages has Cape Breton commercially?

What are the chief natural resources of the province? Write a brief account of the Nova Scotia fishing fleet. Locate the leading mining areas. Compare the coal fields of Nova Scotia with those of Alberta. Why does not Nova Scotia supply coal to Ontario? What are the leading manufactures? How are these related to the natural resources? How is it that apples can be grown to great advantage in the Annapolis Valley, while along the south coast they are not grown? Why is the situation of Nova Scotia so favorable for trade? What advantages as a harbor does Halifax possess over Montreal? Compare the harbors of St. John and Halifax. Locate the chief cities and towns and account for their locations.

PRINCE EDWARD ISLAND

Area and Population.—Prince Edward Island, a crescent-shaped island, lying close to the two other Maritime Provinces in the southern part of the Gulf of St. Lawrence, is the smallest province in the Dominion. The total area is only 2,184 square miles. It is the most densely populated part of the Dominion. About 89,000 people live there —about forty-one to the square mile. Almost all are of Canadian birth and either of British or of French ancestry. There are also a few Micmac Indians.

Coast-Line and Surface.—The island is very irregular in outline, as the land is penetrated by deep bays and inlets. Everywhere the coast is low, and upon the north it is bordered by sand beaches and dunes. The surface, which lies wholly within the Appalachian Highland, is an undulating plain. In the central part, however, there are many picturesque wooded hills, but in no case do these rise to a height of more than 500 feet. The island is well watered, but the streams are small and are all tidal. The soil is a rich sandy loam, of a peculiar deep red color.

Climate.—The proximity of the sea to every part of Prince Edward Island moderates considerably the heat of the summer and the cold of the winter. The air is bracing and healthful. The delightful summer climate brings many visitors, who find additional attraction in the excellent bathing beaches of the northern shore.

Industries.—Nearly the whole surface is tilled, and the fertile soil, made still more productive by the use of sea-weed and oyster and clam shells as fertilizers, amply repays the farmer's toil. Beef, bacon, potatoes, roots, butter, cheese, and eggs are exported in large quantities.

Courtesy of the Canadian National Railways

Farm Scene near Charlottetown

The shallow waters surrounding the island teem with food-fishes of many kinds—cod, herring, mackerel, oysters, and lobsters. The oysters of *Malpeque Bay* are famous the world over. The products of the fisheries and the farms are the chief exports of the island. Neither lumbering nor mining is carried on. Manufacturing is confined to the preparation of food products from the farm and the fisheries. Fox-farming is a flourishing industry, returning large profits to the owners of the farms.

Communication. — Communication with the mainland is maintained by means of a car ferry plying between *Borden* and *Tormentine* in New Brunswick. There *Northumberland Strait* is but nine miles across. The ferry route is kept open in winter. In summer there is a regular steamer service between *Charlottetown* and Pictou in Nova Scotia, and an occasional service between other island ports and New Brunswick. Steamers also connect the principal ports with Quebec, Halifax, and Newfoundland.

Cities and Towns.—The only city on the island is *Charlottetown*, the capital of the province. It is situated on *Hillsborough Bay*, one of the finest harbors on the North American continent. The Provincial Legislative Buildings, St. Dunstan's University, Prince of Wales College, and the workshops of the Canadian National Railways are located there. *Summerside* is the centre of the oyster industry.

Helps.—Mark on an outline map the boundaries of the island. What are its area and population? Compare it in density of population with Alberta. Trace the coast-line, noting particularly its irregularities. Locate the harbors. What is the advantage in the flatness of the island? Suppose a ridge of mountains were to run through the island, what would be the result? What effect has the situation of the island on its climate? Why are there no minerals? What are the natural resources? Why are the people of the island so prosperous? Write a brief account about fox-farming. Account for the location of the most important places.

THE YUKON TERRITORY

Area and Population.—The Yukon Territory comprises the farthest north-west portion of the Dominion. It extends from the northern limit of British Columbia to the Arctic Ocean, and from the Rockies to Alaska. No part of it touches the Pacific Ocean, although at one point it comes within thirty miles of tidewater. The population numbers about 4000.

Surface and Climate.—The territory forms part of the Canadian Cordillera and is, in general, mountainous. There are, however, many stretches of rolling land, with wide flats in the river valleys. The lower tracts of the country are covered with a thick coating of clay, gravel, or sand.

Although the lakes are fairly numerous, they are all comparatively small. There are, however, many splendid rivers. The Liard, in the south, drains a small part of the territory to the Mackenzie River. The Yukon, with its tributaries, the *Lewes*, *Pelly*, *Stewart*, and *Porcupine*, all magnificent streams, drains the rest of the territory to Bering Sea.

Courtesy of Dept. of Interior, Ottawa

Potatoes, near Dawson, Yukon Territory

The moderating winds of the Pacific are barred from the Yukon Territory by the high Pacific Coast Ranges, so that the climate is very rigorous. The winters are long and extremely cold, with temperatures ranging down to 70 below zero. The short summers are delightful, and the long, summer days are so warm and sunny that vegetation grows with amazing rapidity.

Resources.—Although oats, barley, rye, flax, turnips, potatoes, and other vegetables are successfully grown in some parts, the Yukon Territory as a whole has too severe a climate to become an agricultural country.

The southern part is well wooded with timber of fair size, principally white and black spruce. Smaller trees are scattered over the northern half with the exception of a strip along the Arctic coast, where the severity of the climate permits only a few hardy shrubs and plants to survive.

The waters are well stocked with fish. Salmon, whitefish, trout, pickerel, and pike are all found, and add very much to the food-supply of the people. The mineral wealth is very great. Gold is the chief mineral. Coal, copper, and silver are also mined in considerable quantities.

Transportation.—The chief route into the territory is by rail from Skagway in Alaska to Whitehorse on the Yukon River and from there by boat to Dawson. Good wagon roads have been made, and now all the important mining centres can be reached without difficulty. Dog teams are commonly used for winter travel.

Towns.—*Dawson*, at the junction of the Yukon and *Klondike* Rivers, is the capital and chief town of the territory. It is connected with *Bonanza* by a railway twelve miles long, and with Whitehorse by a steamer during the summer months. *Whitehorse*, the terminus of the White Pass and Yukon Railway, is the centre of a rich copper-mining district.

Helps.—Mark on an outline map the boundaries of the Yukon Territory. What are its area and population? Describe the surface. Account for the severity of the winter climate. Account for the rapid growth of vegetation in summer. What are the natural resources of the territory? Describe the means of transportation. What are the chief places?

THE NORTHWEST TERRITORIES

Area and Population.—That part of Canada extending from the Yukon Territory to Hudson Bay, and from the northern boundaries of Alberta, Saskatchewan, and Manitoba to the islands of the Arctic Ocean is given the general name of the Northwest Territories. For purposes of administration it is divided into three provisional districts—Mackenzie, Franklin, and Keewatin. Of its area of more than 1,200,000 square miles, much has never been adequately explored. There are but few people within the territories, mainly Indians, Eskimos, trappers, and employees of the fur companies, totalling only about 8,000 in all.

Surface and Climate.—Much of this vast area is a treeless wilderness of rock and swamp, covered with mosses and lichens, which provide food for the caribou and the musk-ox. This desolate land, roughly speaking, lies north-east of a curving line drawn from the mouth of the *Seal River* on Hudson Bay through the middle of Great Slave and Great Bear Lakes to the mouth of the *Anderson River* on the Arctic Ocean. This great area in winter is possibly the coldest and dreariest part of the North American continent.

To the south and west of the *Barren Lands* are well-wooded regions. The climate of the Mackenzie Basin is much milder than that of the Barren Lands in the same latitude, due partly to the low elevation of the valley lands, partly to the influence of the Chinook winds, and partly to the presence of large bodies of water. Trees a foot in diameter grow in the delta of the Mackenzie, well within the Arctic Circle, while wheat has been successfully grown at *Fort Simpson*, a point as far north-west of Winnipeg as Winnipeg is from New York.

Courtesy of Dept. of Interior, Ottawa

Eskimo Whale-boats, Fort McPherson

Resources.—In addition to a certain, though limited, extent of farming land along the Mackenzie and Liard Rivers, the Northwest Territories have other resources of great value. Copper is known to occur in vast quantities in the Barren Lands.

It is now known that the basin of the Mackenzie is rich in petroleum, coal, and natural gas, and the opening up of the oil-bearing areas has already begun. There is also an enormous supply of pulpwood, which should prove a valuable asset in the future development of the country. At present the fur-trade is the chief occupation of the people of the territories.

Helps.—Mark on an outline map the boundaries of the Northwest Territories. Mark the provisional districts. What are the area and population? Describe the surface. Compare the climate with that of Southern Alberta. Of what use is this district to Canada? What is the chief occupation of the people?

NEWFOUNDLAND

Area and Population.—The island of Newfoundland lies at the entrance to the Gulf of St. Lawrence. As a consequence, ships from Great Britain to Montreal and Quebec must pass either through the *Strait of Belle Isle,* which in some places is but twelve miles wide, or through *Cabot Strait,* about sixty-five miles in width, which separates Newfoundland from Cape Breton Island.

Newfoundland includes not only the island itself, but also a large territory, 700 miles in length and about 115,000 square miles in area, along the eastern side of the Labrador Peninsula. This section was long in dispute with Canada, but was, in 1927, awarded by a decision of the Privy Council to Newfoundland. It is now known as the *Coast of Labrador.* The island proper is triangular in shape, its greatest length being about 325 miles and its greatest width about 310 miles. The population numbers about 250,000, chiefly of British birth or descent.

Surface and Coast-Line.—The surface of the island is very irregular. In general, the hills are near the coast. The interior is an undulating country, covered with marshes, lakes, and tracts of barren land. The almost innumerable small lakes take up about a third of the surface of the entire island. The higher hills are covered with forests, but along the streams in the valleys there is a considerable area of arable land. The rivers are small and for the most part not navigable; the largest are the *Humber* and the *River of Exploits.*

The coast-line, which is about 2,000 miles in length, is very irregular. The coast itself is high and rugged, and there are, near the coast, many small, rocky islands. There are a number of excellent natural harbors, the most important of which is *St. John's.*

Climate.—Owing to the Arctic Current which flows along the eastern coast of Newfoundland, the eastern part of the island is cooler than the western section. All over the island the temperature in winter rarely falls below zero, while the summers are quite hot. The meeting of the moist, warm air over the Gulf Stream with the colder air above the Arctic Current causes frequent fogs along the south and south-eastern coasts, making navigation dangerous. The rainfall is abundant and extends over the year.

The City of St. John's, Newfoundland

Fishing and Sealing.—About one-fourth of the people of Newfoundland are engaged in the catching and curing of fish. Cod are caught, some in the bays and inlets along the shore and some on the Grand Banks. While the latter fishing ground is open to all nations, the necessary bait is for the most part found within the territorial waters of Newfoundland, that is, within three miles from the coast. The privilege of selling bait to foreigners is jealously guarded by the islanders and is a source of considerable revenue. Salmon, herring, and haddock are also caught on the Grand Banks. A great deal of the cod is dried before being exported. Lobsters are trapped along the shores, and a part of the catch is shipped to the United States, the remainder being canned in factories along the coast. Fresh-water fishing is also of importance, the streams of the island teeming with salmon and other fish.

Sealing is the industry next in importance. Each year thousands of seals, which have taken refuge on the ice to bring up their young, are carried along the coast of Labrador and Newfoundland on the ice fields, or floes, brought down by the Arctic Current. These seals fall an easy prey to the hunters, who set out early in the spring in vessels specially constructed for navigation among the ice. The hunters make their way from floe to floe, slaughtering the seals with clubs and carrying away the skins and blubber. The industry is dangerous, but very profitable. Much of the blubber is refined on the island and exported as seal-oil.

Other Industries.—The forest wealth of the country, especially of the Coast of Labrador, is enormous in material both for lumber and for pulpwood. Spruce, fir, tamarack, and birch are the principal trees. There are several large pulp and paper mills, most of the product of which is exported to England. There are also many saw-mills.

The island is rich in minerals, so that mining is likely to displace fishing as the leading industry. Iron ore, exported largely to Sydney, Nova Scotia, and coal are the chief mineral products. Vast deposits of gypsum are found on the western coast. Copper, lead, and asbestos are produced in paying quantities. Petroleum has lately been discovered at various points.

The soil is, in general, cold and wet and not well adapted for farming. However, there are large tracts of fertile land in the river valleys. Oats, hay, and vegetables are the principal crops.

The manufactures, with the exception of lumber, pulpwood, and paper, are few, and are mainly connected with the fishing industry. The most important are twine, nets, ropes, seal-oil, frozen fish, and canned lobsters.

Transportation.—Owing to the irregular and rugged nature of its surface, the island has few railways. The principal places are connected by a railway about 700 miles in length, owned and operated by the government. Communication with Canada, the United States, and Europe is maintained by a number of steamship lines. As the south-eastern part of the island is the point in North America nearest to Europe, it is the landing-place for several of the cables crossing the Atlantic.

Cities and Towns.—*St. John's*, the capital and largest city, is situated on a beautiful land-locked harbor on the east side of the *Avalon Peninsula.* The harbor is capable of accommodating vessels of the largest tonnage and is provided with a large dry-dock. Many manufacturing plants are located there. *Harbour Grace*, a fishing centre, and *Bonavista* are thriving places.

Helps.—Compare Newfoundland in area and population with New Brunswick. Trace the coast-line. What advantage is the irregular coast-line? Compare it with that of the Atlantic coast of Nova Scotia. Describe the surface. Why is the interior so little known? What are the chief natural resources? Give a brief description of fishing and sealing in Newfoundland. Compare with Quebec as a lumbering country. What are the disadvantages connected with lumbering on the island? What prevents the development of the mines? Why is there not more farming? Locate the principal harbors. What are the chief exports of Newfoundland?

THE UNITED STATES OF AMERICA

Position and Extent.—The United States of America extends from Canada on the north to Mexico and the Gulf of Mexico on the south, and from the Atlantic Ocean on the east to the Pacific Ocean on the west. Not including Alaska and other dependencies, it has an area somewhat smaller than that of Canada, but it has a population about thirteen times as great.

People.—The majority of the people in the United States are of European extraction, with the British element predominating. Germans, French, Spaniards, Italians, Swedes, Norwegians, Poles, Russians, Hungarians, and Jews have emigrated in large numbers to the United States during the last fifty years. The Negroes, who are the descendants of the slaves, form about ten per cent of the population, and their number is increasing. They live chiefly in the south-eastern states. The Indians, who formerly occupied the whole country, are now mainly confined to reserves and are not increasing much in numbers.

Dependencies.—The United States has acquired in the last sixty years certain territories beyond its own boundaries. In 1867 *Alaska* was purchased from Russia. Later, the *Hawaiian Islands* joined the United States of their own accord; *Porto Rico* and the *Philippine Islands* were won in a war with Spain; and three of the *Virgin Islands* in the West Indies were bought from Denmark. In 1903 the *Panama Canal Zone* was purchased from the republic of Panama. The United States also owns a number of small islands in the Pacific Ocean.

Photo by Charles L. Franck

Steamers along the River Front, New Orleans

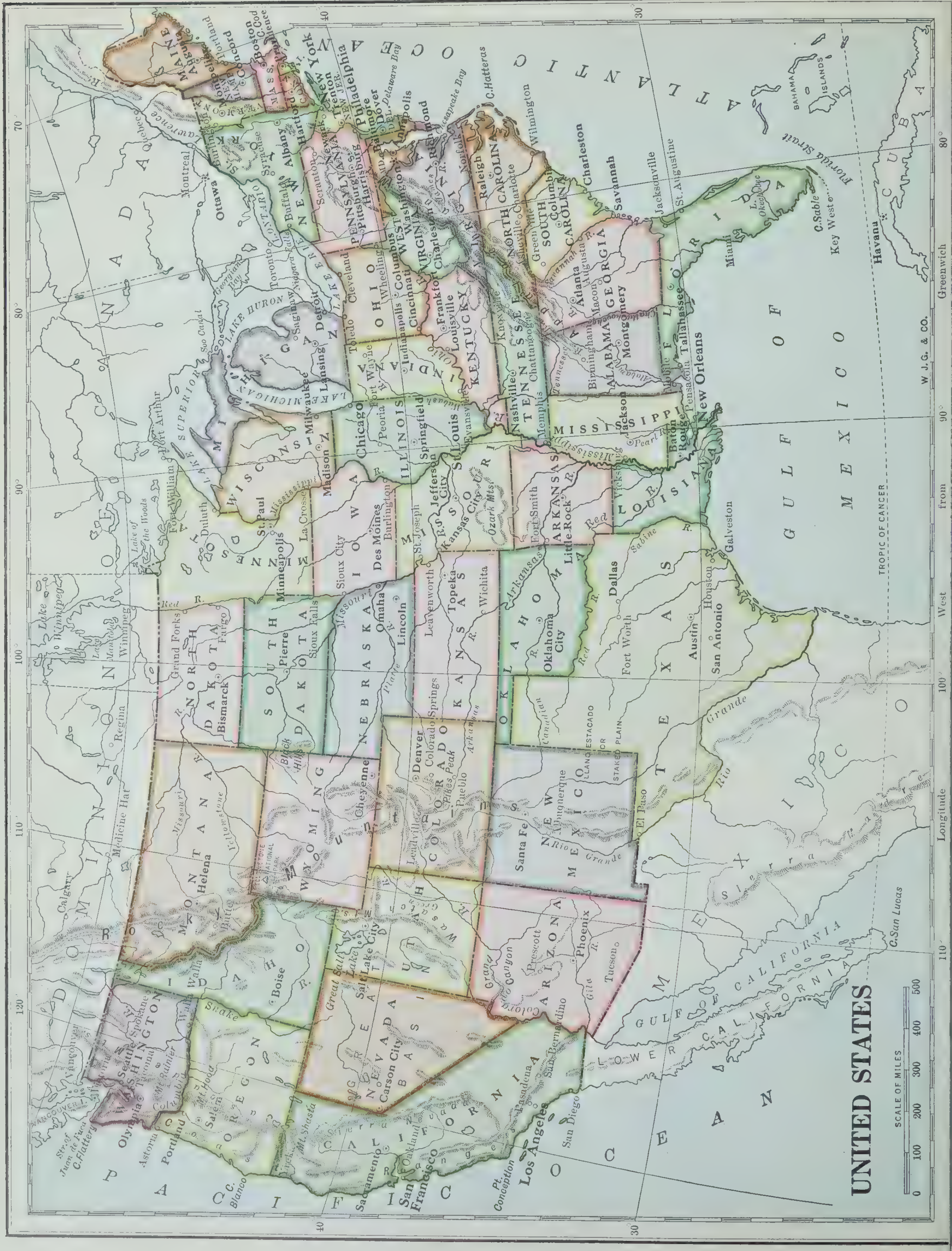
SURFACE

Natural Divisions.—The general features of the United States have already been considered. In the east and south-east there is the *Atlantic and Gulf Coastal Plain*, bordering upon the Atlantic Coast south of New York and upon the northern coast of the Gulf of Mexico. Back of the Atlantic portion of the coastal plain is the *Appalachian Highland*. From New York northward this highland extends right to the Atlantic coast. The Appalachian Highland is steep and abrupt upon its eastern face, but towards the west slopes gently down into the *Great Central Plain*. West of the Mississippi River the ground rises gradually to the foothills of the Rockies, which mark the eastern margin of the *Cordilleran Region*. The Cordilleran Region of the United States, with its wide basins and plateaus, occupies about one-third of the country.

Both the surface and the climate of these physical divisions have been fully described in the section dealing with North America. *See pages 18 to 26.* In considering them in detail, it will be necessary to refer to the surface and climate only when necessary to explain certain aspects peculiar to the particular region.

THE ATLANTIC AND GULF COASTAL PLAIN

Position and Extent.—From *New Jersey* to *Georgia* a low plain separates the Appalachian Highland from the Atlantic Ocean and extends southward to embrace the whole peninsula of Florida. This plain stretches westward between the southern end of the Appalachian Highland and the Gulf of Mexico. Still farther to the west it becomes very wide, extending up the flat valley of the Mississippi River as far as the Ohio River, and stretching along the coast of Texas right to the Rio Grande. This is the Atlantic and Gulf Coastal Plain, a natural region includ-



UNITED STATES

ing over a tenth of the total area of the United States.

Surface.—This plain has been built of sand, gravel, and clay washed down by rivers from the higher land of the interior. There are many marshy areas, which are always to be found in level districts which have a heavy rainfall. In general, the soil is level, soft, and fine.

Coast.—The coast of the whole Plain, right from New York to Mexico, is low and sandy. Parallel with the coast the waves have piled up sand beaches. Between the coast and these barrier beaches are lagoons, which form good harbors for small boats. In the north, from New York to *Richmond*, there are several large estuaries, such as *Chesapeake Bay*, *Delaware Bay*, and *New York Bay*. These make excellent harbors for the largest ships. Southward from Richmond, however, even fairly good harbors are very scarce.

Negroes picking Cotton

Drainage.—From the Appalachian Plateau many rivers flow eastward to the Atlantic. In the north are the Delaware, the Potomac, and the James, all navigable in their course across the Plain. In this part of the Plain the great ports are at the head of navigation, just at the Fall Line. Farther south the rivers are not navigable by ocean vessels, and the ports are found at their mouths.

Farming.—Farming is the great industry and the chief source of wealth for the people of the Coastal Plain. In the northern part of the plain market-gardening has become of great importance, especially in *Long Island*, *New Jersey*, and in districts close to the large cities further south. The light, sandy soil, so common in this part of the Plain, is ideal for vegetation and fruit when properly fertilized. The heavier clay soils are used mainly for general farming.

Farther south cotton is the great crop. The labor involved in raising cotton is very great, as in addition to the work of preparing the ground, planting, and cultivating, the crop must be harvested by hand, the cotton fibre being removed from each boll separately by the cotton-pickers. The Negro population of the south-eastern states provides the cheap labor needed by the growers of cotton. After it is picked, the fibre is put through a machine called a *cotton-gin*, which separates the fibre from the seeds. The fibre is then baled and is ready for the market.

The cotton seeds are also valuable. Their hulls are excellent feed for cattle. Cotton-seed-oil, pressed out of the seeds after the hulls are removed, is a valuable food, being used as a substitute for olive-oil, for lard, and for other fats used in cooking. The *cake*, or residue left after the oil is extracted, is ground into meal, which is used for cattle feed and for fertilizer. Three-fifths of the world's supply of cotton is grown in the southern section of the Coastal Plain.

Sugar-cane is also grown throughout the southern part of the Plain, but is an especially heavy crop in the rich, moist, hot lands of the Mississippi delta. Corn is a widespread crop, and is the chief cereal grown. Rice is a large crop along the coasts of *Louisiana* and *Texas*, and is also grown in swamp-lands on the Atlantic coast. Subtropical fruits—oranges, grape-fruit, and pineapples—are the chief agricultural products of Florida.

Mineral Products.—Certain of the sands and clays of the coastal plain are valuable for the making of glass and pottery. New Jersey is the centre of these industries. Florida has great deposits of phosphate rock, which is powdered and used as a fertilizer. In Louisiana and Texas are large sulphur-beds, the largest source of supply in the world. These two states also produce much petroleum. Salt is also obtained in large quantities in Louisiana.

Forest Products.—Many large sandy areas in the Atlantic Coastal Plain are covered with pine forests. The lumber from these trees is harder than that from our Northern pines, and is not so easily worked. It is, however, very useful both for indoor trim and for structural purposes. These pine forests also produce resin and turpentine, two very valuable substances obtained from the resin of the trees. In the Southern States the cypress is the chief timber tree.

Fishing.—Fishing is particularly important in the northern part of the Coastal Plain. Mackerel and bluefish are caught in the deep-sea fisheries. More important, however, are the shad and the herring, which enter the bays and the streams in countless thousands in the spring to spawn. The herring are taken in vast numbers, and are sold very cheaply. The oyster industry brings, however, larger cash returns. In the south, large numbers of valuable sponges and turtles are taken.

Sugar-cane

Manufactures and Trade.—Very little manufacturing is done in the cities of the Coastal Plain except in those situated along the Fall Line. These cities, which really belong to the Appalachian Region, will be considered later. The purely coastal cities are trading centres rather than manufacturing cities.

Cities.—*Wilmington,* in North Carolina, and *Charleston,* in South Carolina, are important ports. *Savannah,* in Georgia, is one of the leading ports of the United States in cotton shipments, and ships more naval stores than any other port in the world. *Jacksonville,* on the Atlantic coast of Florida, is an important centre for lumber, resin, and turpentine. *Tampa* is the chief seaport on the Gulf coast of Florida. The most important city in the whole of the plain is *New Orleans,* situated on the Mississippi delta. Through it passes much of the produce of the lower Mississippi Valley. *Galveston* is the principal seaport of Texas. It leads the world in the export of cotton.

THE APPALACHIAN REGION

Position and Extent.—The Appalachian Region extends north-eastward from central *Alabama* to within a short distance of the south shores of Lakes Erie and Ontario, and to the Canadian boundary from Lake Ontario to the Atlantic. Its length within the United States is about 1,400 miles, its average breadth about 300 miles. This region, especially towards the north, is the most densely populated part of the United States.

Coast.—The Atlantic coast from New York northward is much like that of Nova Scotia, being deeply indented, and so having many sheltered harbors. The best of these, such as New York and *Boston,* have become great ocean ports, while the smaller coves are used by fishing-craft.

Divisions.—Because of the considerable differences in resources and products between the northern part and the rest of the Appalachian Region, it is convenient to consider them separately.

THE NORTHERN SECTION

Position and Extent.—*Maine, New Hampshire, Vermont, Massachusetts, Rhode Island,* and *Connecticut,* known as the *New England States,* cover the northern portion of the Appalachian Highland. These states all together are only about three times the size of Nova Scotia, yet their population is over seven millions.

Surface and Drainage.—New England is, generally speaking, a plateau with a surface diversified by hills, mountains, and valleys. In the north thousands of small lakes dot the surface, but some of them are little more than swamps. The rivers for the most part flow southward. Flowing from the upland, they are short and rapid, and are not very useful for navigation owing to the numerous waterfalls. The most important are the *Connecticut,* the *Penobscot,* and the *Kennebec.* Many of the rivers are tidal, some for quite long distances.

Farming.—On the whole, New England cannot be considered a good agricultural country. Only about one-eighth of the people are engaged in farming. Much of the surface is mountainous. In many districts the soil is thin and poor, while in others it is filled with boulders and small stones. There is, however, a great deal of fertile soil, especially in the valleys of the larger rivers and in the *Lake Champlain* district. The farms are generally small and are devoted to market-gardening, poultry-raising, and dairying, and, in the valley of the *Connecticut River,* to the cultivation of tobacco.

Fishing.—As in Nova Scotia, fishing is one of the principal industries. Cod, halibut, mackerel, and herring are the principal fish caught. Lobsters are trapped near the shore, while oysters, clams, and scallops are found in abundance in the shallow waters all along the coast.

Minerals.—New England is exceedingly rich in building, paving, and ornamental stone, so that quarrying is of great importance. Granite, marble, sandstone, and slate are quarried, and shipped to all parts of the United States. There are few other mineral deposits of value in any of the states.

Forest Products.—Although New England in the last 300 years has been cleared of much of its forest growth, there are still large timber areas. Pine, spruce, and hemlock are the principal soft woods, while white oak, ash, maple, and birch are the chief of the harder woods. Lumbering is carried on in the same way as it is in Canada. Much of the wood cut is used in the manufacture of paper. Another important forest product is tannic acid, which is made from the bark of the hemlock and is used in the tanning of leather. In the spring many of the farmers make maple-sugar and maple-syrup.

Manufactures. — The magnificent water and electric power available almost everywhere, the nearness to the coal fields of Pennsylvania, the excellent harbors along the coast, the numerous railways, and the moist and invigorating climate are the chief reasons for the growth of New England as a great manufacturing district. More than half of the people are employed in factories. The principal manufactures are cotton, woollen, and leather goods, silk, furniture, boots and shoes, wood-pulp and paper, hardware and cutlery, watches and jewellery, and dressed granite and marble.

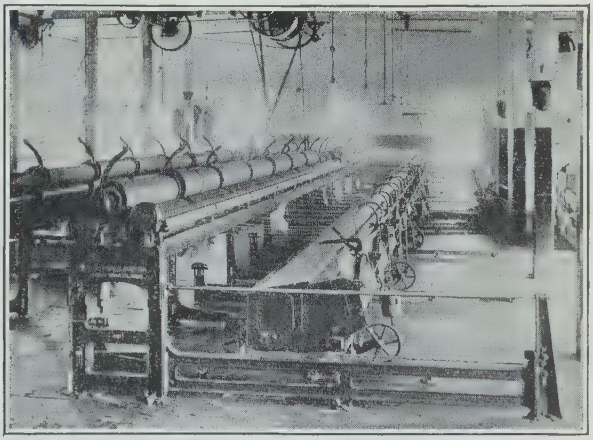


Photo from Ewing Galloway, N.Y.

Weaving Woollen Cloth at Lawrence

Cities and Towns.—*Boston,* the largest and most important city in New England, has a fine harbor and has the additional advantage of being within easy reach of at least twenty large manufacturing towns. The greater part of the commerce of these towns passes through Boston. The city is noted for its trade in food-stuffs, wool, and leather, and for its extensive shipping interests. It has beautiful parks, fine public buildings, and large educational and charitable institutions. Across the *Charles River* from Boston is *Cambridge*, the seat of Harvard College. *Providence*, the second city in size in New England, is situated on the *Providence River*. It has large manufactures and a growing shipping trade. The third city, *Worcester*, close to Boston, has large iron and steel and wire works.

The other cities of New England are too numerous for extended notice, but a few may be named. *Lynn*, *Haverhill*, and *Brockton*, are the chief boot and shoe cities. Cotton is manufactured at *Fall River*, *Lowell*, and *New Bedford*, while *Lawrence* and *Woonsocket* are the centres of the woollen industry. *Waltham* and *Waterbury* are noted for the manufacture of watches. *New Haven* is a commercial city and the seat of Yale University. *Portsmouth* has a large naval yard. *Portland*, on the coast of Maine, is the eastern terminal of the Grand Trunk Division of the Canadian National Railways, and is also an important shipping point. *Holyoke* is famous for its paper-mills. *Springfield*, situated in the Connecticut Valley, has large manufactures of railway cars and automobiles. *Newport* and *Bar Harbor* are favorite summer resorts.

THE CENTRAL AND SOUTHERN SECTIONS

Surface and Drainage.—The surface of the central and southern portions of the Appalachian Region is formed by the series of parallel ranges of the Appalachian Mountains with broad valleys between, together with the much more even and level ground of the Piedmont and Appalachian Plateaus. The Mohawk River, an important tributary of the Hudson, has cut a wide valley across the Highland in New York state. This forms the only easy route across the Highland, and is a very important artery of trade. Farther south, the Delaware, the Susquehanna, the Potomac, the James, the *Savannah*, and many lesser streams flow eastward from the Appalachian Mountains. These all provide water-power where they drop from the Piedmont Plateau to the Coastal Plain. On the Appalachian Plateau the Ohio, with its two important tributaries, the *Monongahela* and the *Allegheny*, and further to the south, the *Tennessee*, are the chief rivers. These streams flowing eastward are tributaries of the Mississippi.

Farming.—Farming is of much greater importance in this part of the Appalachian Region than in New England. To the north, in New York State and Pennsylvania, mixed farming is the usual type. Dairy products are the chief agricultural product. Along the south shore of Lake Ontario is one of the finest fruit-growing areas in the United States, producing great quantities of apples, pears, and grapes. Farther to the south tobacco is the main crop on both the Piedmont and Appalachian Plateaus. There are also stock-farms where high-grade cattle are reared, and sheep and hogs are kept on many farms. Cotton is grown on the Piedmont Plateau in *South Carolina* and *Georgia*, and in the latter state peaches are a very large crop.

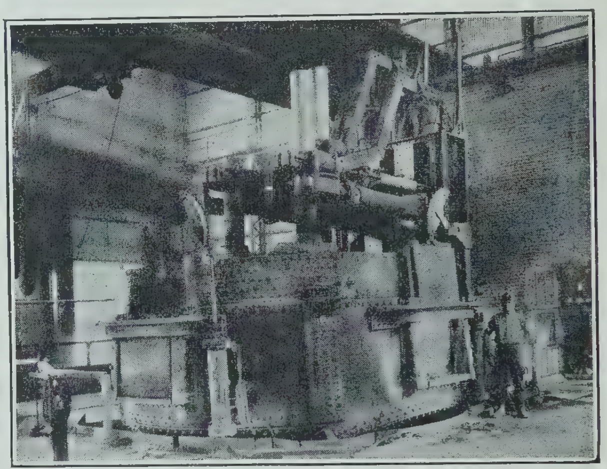


Photo from Ewing Galloway, N.Y.

Melting Steel at Pittsburgh, Pennsylvania

Lumbering.—There are large areas covered with hardwood forests in the southern part of the Highland. New York and Pennsylvania manufacture immense quantities of pulpwood, some of which is cut within these states. The greater part, however, is imported from Canada.

Mineral Products.—The Appalachian Plateau contains enormous coal-beds. Pennsylvania alone produces nearly all the anthracite coal mined in the world, and has in addition very large areas of bituminous coal lands. Iron occurs in the Appalachian ranges. Limestone, which is needed to add to the iron ore when being smelted, is quarried close to the iron mines. These three minerals, occurring in such convenient proximity to one another, have caused this part of the United States to become the centre of the iron and steel industry. The factories making iron and steel products are almost innumerable.

Photo from Ewing Galloway, N.Y.

Coal-mining in Kentucky

Petroleum is another important product, especially in Pennsylvania. The crude oil is piped to the refineries, where it is manufactured into kerosene, gasoline, benzine, vaseline, paraffin, lubricating oils, and many other products. Natural gas is also found nearly everywhere, and is used both for illuminating and manufacturing. Other mineral products of less importance are lead and zinc, found in the Appalachian Mountains, and salt, produced in large quantities near *Syracuse* in New York State.

Manufacturing.—This section of the Appalachian Region is a great industrial district. The water-powers along the Fall Line and the coal fields of the Appalachian Plateau provide power in abundance. In addition to the iron and steel industry, there are many factories producing textiles, leather goods, clothing of all kinds, and many other products.

Cities.—Situated on a magnificent harbor at the mouth of the Hudson River, *New York*, with a population of over six millions, is the financial, commercial, and industrial centre of the United States. Through it passes the greater part of the exports and imports of the country, so that its shipping trade is enormous. Hundreds of thousands of people are employed in various manufactures within the city. Its parks, museums, art galleries, and public buildings are famous all over the world.

At the head of ocean navigation on the Delaware River is *Philadelphia*, the third city in size in the United States. It has splendid railway connections, is close to the iron and steel districts, and has large shipping interests and many manufactures. *Baltimore* is located near the head of Chesapeake Bay on a good harbor. It is an important shipping point and a centre for the trade in canned fruits, vegetables, and oysters. Many railways centre in *Pittsburgh*, which is situated at a point where two

Photo from Ewing Galloway, N.Y.

A Great Railway Station, New York

small rivers join to form the Ohio River. The city has large manufactures of iron and steel goods and plate-glass. *Buffalo*, at the eastern end of Lake Erie, is the second city in size in New York State. It has direct shipping connections with the Upper Lakes and has many large manufactures.

A few of the other important cities may be mentioned: *Rochester, Syracuse, Utica, Newark*, and *Jersey City*, manufacturing cities; *Albany*, the capital of New York State, with its beautiful State building; *Scranton*, the centre of the anthracite coal district; *Bethlehem*, a leading steel city; *Richmond*, a great tobacco market; and *Birmingham*, the centre of a large iron and steel industry in the southern part of the Appalachian Region.

The District of Columbia.—This District, 69 square miles in area, lies wholly within the state of *Maryland*, and is owned and administered by the government of the United States. *Washington*, the federal capital, lies within the district on the Potomac River. The city is beautifully laid out. Among its many fine buildings are the White House, which is the residence of the President, and the Capitol Building, where Congress assembles.

The Capitol at Washington

THE GREAT CENTRAL PLAIN

Position, Extent, and Surface.—Between the Cordillera and the Appalachian Plateau lies the Great Central Plain, sloping down from both Highlands to the Mississippi River. On the north the Central Plain extends to the Great Lakes and the Canadian boundary; to the south it meets and blends imperceptibly with the Gulf Coastal Plain. In all this vast expanse of almost level land there are only three large hilly areas. One, the *Ozark Plateau*, lies west of the Mississippi in the states of *Missouri, Arkansas*, and *Oklahoma*. The second is the *Black Hills* in *South Dakota*. The third is formed by the small part of the Laurentian Plateau lying west and south of Lake Superior.

Drainage.—The Mississippi River and its tributaries drain almost the whole of the Central Plain. From the west come the Missouri, the *Arkansas*, and the Red River, from the east the Ohio and many smaller streams. The rivers named are large and deep, and are navigable for the greater part of their length. The rivers of *Michigan* nearly all flow to the Great Lakes, while parts of *North Dakota* and *Minnesota* are drained into Hudson Bay through the Red River.

Farming.—The Central Plain Region of the United States is the greatest food-producing area in the world. It is the main source of the meat and grain supplies for the people of that country, and in addition raises a very large surplus which is exported, mainly to Europe. In the belt of states extending from *Ohio* on the east to *Nebraska* on the west corn is the main crop. Wheat, barley, and oats are widely grown over the whole of the Plain. The largest wheat-growing areas are in North Dakota, South Dakota, Nebraska, and *Kansas*. Much of the grain grown, especially in the corn belt, is fed to hogs, which are raised in very great numbers. On the ranches of the western part of the Plain are raised millions of cattle and sheep. Sugar-beets and potatoes are grown chiefly in Michigan and *Wisconsin*.

Dairying is of great importance in the Great Central Plain, Minnesota and Wisconsin being the chief centres of production.

Minerals.—Coal is very widely distributed over the Central Plain, and much is mined at many different places. *Indiana* and *Illinois*, in particular, produce a large amount. Natural gas is found in many districts. Petroleum, especially in *Oklahoma*, is another very valuable product. The greatest iron mines in the world are found west and south of Lake Superior, where the Laurentian Plateau projects down into the Central Plain. Copper is another product of this locality. Lead and zinc are mined in the *Ozark Mountains* in Missouri. In Michigan and Ohio salt is a valuable mineral product.

Lumbering.—Most of the Plain region lacks trees entirely, but Michigan, Wisconsin, and Minnesota still produce much lumber, although the choicest trees were cut long ago. Most of this is used for local purposes. In Ohio there are some splendid stands of hardwoods such as maple, birch, and oak.

Manufacturing. — The meat-packing industry has already been referred to as of prime importance. Tens of thousands of men are employed in the stockyards and packing plants in *Chicago*, *Kansas City*, *Omaha*, and other cities. Much of the meat is sold fresh, but a great deal is canned and cured for export. Hog-fat is used for lard, and cattle-fat for the making of oleomargarine. The hides are tanned for leather, the horns and hoofs are used for making glue, the bones for buttons and combs and in the refining of sugar, the hair for upholstery and plaster, and the blood for fertilizers. Even the bristles from the ears of the hogs are made use of in the making of brushes for children's paint boxes. Nothing is wasted in the packing plants.

The other important manufactures can merely be mentioned. These are agricultural implements to supply the enormous demand of the farming regions close at hand, automobiles, carriages, iron and steel goods, furniture, wood-pulp, flour, ready-made clothing, boots and shoes, gasoline and coal-oil, and textiles of various kinds.

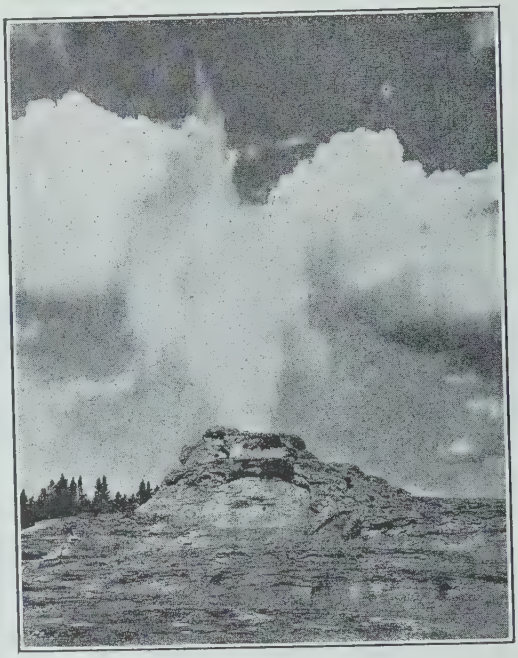
Ploughing by Tractor on the Plains of Illinois

Cities and Towns.—The largest and most important city of the Central Plain is *Chicago* on Lake Michigan, the second city of the United States in size. It is especially noted for its stockyards, nearly a square mile in extent, and for its packing plants. Its situation, close to the corn, coal, iron, and lumber regions, and its good rail and water connections have made it one of the greatest manufacturing cities in the world. It has handsome public buildings, museums, art galleries, and beautiful parks and avenues.

On Lake Superior are *Superior* and *Duluth*, both with excellent harbors and a large grain and ore shipping trade. *St. Paul* and *Minneapolis*, on the Mississippi River, are commercial and manufacturing cities, the latter being the leading flour-milling city in the United States. *St. Louis*, on the Mississippi, has a large shipping trade and many manufactures. *Omaha* and *Kansas City* have large packing plants and are important railway centres. *Cleveland*, on Lake Erie, is noted for its oil-refining and ship-building. It receives much of the iron ore from Lake Superior and forwards most of it to Pittsburgh. The manufacture of automobiles has added much to the prosperity of *Detroit* on the Detroit River. *Cincinnati* is a large commercial and manufacturing centre, as is also *Milwaukee* on Lake Michigan. *Indianapolis* is situated in the midst of the corn-belt. *Louisville*, on the Ohio River, is the largest tobacco market in the world and has many manufactures.

THE CORDILLERAN REGION

Position and Extent.—The whole western section of the United States from the Canadian to the Mexican border forms the Cordilleran Region of that country. This region is narrowest at the Canadian boundary, where it is only about 500 miles wide. To the south it broadens rapidly to a width of 1,000 miles and more in latitude 40° N. About one-third of the whole area of the United States is included in this division. *Idaho*, one of the smallest of the states in this region, is larger than the whole of the New England States.



A Geyser in the Yellowstone Park

Divisions.—Because of the great differences between the interior areas and the coastal districts of the Cordilleran Region, it is convenient to consider separately the Plateau States of the interior—*Montana*, *Wyoming*, *Colorado*, *New Mexico*, *Arizona*, *Nevada*, *Utah*, and *Idaho*—and the states of the Pacific Coast—*Washington*, *Oregon*, and *California*.

THE PLATEAU STATES

Extent.—The Plateau States cover an enormous territory. Idaho, the smallest of them, is larger than the whole of New England. Their population, however, is comparatively thin—three million people scattered over an area of 800,000 square miles, giving a density of population very little greater than that of Canada.

The scenery among the mountains of the Plateau States is very grand. To preserve the most striking of the natural features, the government has set aside three great national parks in this area—The *Grand Canyon of the Colorado*, the *Yellowstone National Park*, and the *Glacier National Park*. The Grand Canyon is one of the wonders of the world. This canyon, through which runs the Colorado River, is in many places a mile deep and from two to twelve miles wide. The Yellowstone Park, most of which is in Wyoming, has much magnificent scenery—canyons, waterfalls, geysers, and hot springs. The coloring of the rocks in the canyon of the *Yellowstone River* is superb. The Glacier Park, in Montana, has many beautiful mountains, glaciers, and lakes.

Ranching and Farming.—Sheep, cattle, and horses are raised in immense numbers in the Plateau States. As the grass is everywhere somewhat thin and the water scarce, the herds have to be moved frequently, and large ranges are needed. But while the grass is sufficient for pasturage, there is in general not sufficient rain for the growing of crops. Recourse, therefore, has been had to irrigation. Since its introduction the "Great American Desert," as this district was formerly called, has completely changed. Colorado now ranks first and Utah fourth in the

United States in the production of sugar-beets. Alfalfa, for cattle fodder, yields from two to four crops a year. Wheat and other grains are grown, but more attention is paid to the cultivation of small fruits and vegetables. High grade cotton is grown under irrigation in Arizona.

Mineral Wealth.—The Plateau States are extraordinarily rich in minerals. The most important are gold, silver, copper, and lead. Coal is found in all the states, but it is mined extensively in Colorado, where it is made into coke for smelting purposes. Marble of a special quality is also quarried in Colorado.

Forest Products.—Practically the whole forest region is under very careful supervision, either state or federal. The settlers are allowed a certain amount of wood for fuel, but if they want more they must pay for it. The lumbermen are allowed to cut only such trees as are marked by government inspectors. The forests are patrolled regularly by rangers, whose duty it is to stop illegal cutting and to prevent fires. Careful attention is paid to reforestation. The trees are principally pine, spruce, and hemlock, although birch and poplar are plentiful.

Cities and Towns.—The largest and most important city in the Plateau States is *Denver* in Colorado. It is a railway city, with many large smelters. Its location and climate are so healthful that invalids visit the city in large numbers. *Colorado Springs* is a health resort, famous also for the fine scenery in the vicinity. *Leadville* and *Cripple Creek* are mining centres, and there are many smelters at *Pueblo*. *Salt Lake City*, in Utah, lies in the midst of a fertile irrigated district and is the home of the Mormon Church. The Mormon Tabernacle there is a magnificent building. *Ogden*, also in Utah, is a thriving railway town. *Virginia City* and *Carson City*, in Nevada, are centres of the silver-mining industry. *Butte*, in Montana, has rich copper mines in its vicinity. *Billings*, also in Montana, is a noted sheep centre and one of the greatest wool markets in the world. *Tucson* and *Phoenix*, in Arizona, are mining towns surrounded by a rich farming district. *Sante Fe*, in New Mexico, is an interesting old Spanish town.

THE STATES OF THE PACIFIC COAST

Extent.—The Pacific Coast States lie along the coast of the Pacific Ocean from Canada to Mexico, a distance of 1,200 miles. The area of these states is about 325,000 square miles, and the population is now over five millions and is increasing very rapidly.

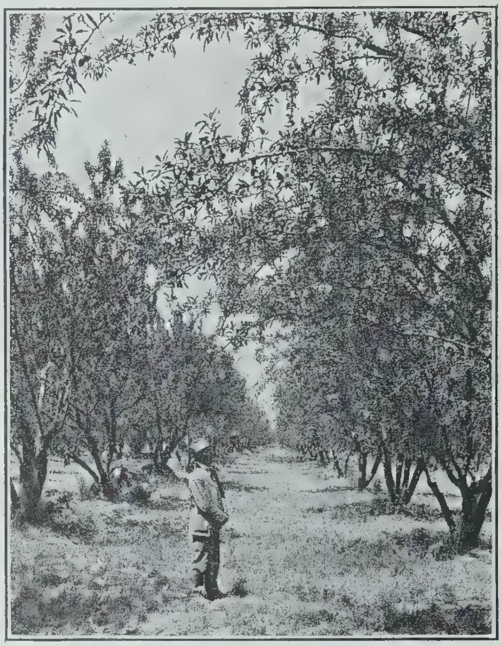
The Pacific Coast States are rich in beautiful natural parks reserved by the government for the benefit of the people. Among these are the famous *Yosemite Valley* in California, *Crater Lake* in Oregon, and the *Rainier National Park* in Washington.

Coast-Line.—The coast-line from *Puget Sound* on the north to Southern *California* is so regular that, with the exception of *San Francisco* on the bay of the same name, and *Seattle* and a few other places on Puget Sound, there are practically no good harbors.

The Roosevelt Dam, Arizona

Farming.—Agriculture is of the greatest importance in the three states along the Pacific Coast. *Washington* and *Oregon* grow wheat, barley, hops, and sugar-beets, and the rich soil of the numerous valleys yields wonderful crops of apples, plums, strawberries, and small fruits generally. California also grows wheat, barley, and sugar-beets, but its most valuable crop is fruit. The subtropical climate, the even temperature, and the ample sunshine ensure that all kinds of fruits, temperate and tropical, will grow there to perfection—oranges, lemons, grape-fruit, figs, grapes, apples, plums, pears, apricots, and olives, as well as almonds and walnuts.

Fruit-farming is carried on scientifically, with all the assistance that the most modern methods of irrigation can give. The fruit is carefully packed and just as carefully shipped, so that it reaches the markets of the world in first-class condition. Side by side with fruit-growing, there is a large industry in the canning of fruit, and in the drying of grapes into raisins and plums into prunes. Stock-raising and dairy-farming are of importance. The butter, milk, and cheese from the farms find a ready sale. There are also large sheep-ranches, and poultry-raising is engaging the attention of more and more farmers.


Almond Trees in California

Fishing.—Salmon-fishing is one of the great industries of Washington and Oregon, as it is of British Columbia. Connected with the fishing is the canning of the product.

Lumbering.—Lumbering is mainly confined to the immense forests of Washington and Oregon. The forests there are similar to those of British Columbia, and lumbering is done in much the same way. Washington stands first in the United States in the value of its forest products. In California the enormous redwood trees are prized for their beautiful wood, much in demand for interior decoration.

Minerals.—In all the Pacific Coast States there is more or less mining. Washington contains large areas of bituminous coal. California produces gold and mercury, and is the leading state in the Union in the production of petroleum. Soda and borax are found in the desert regions of California.

Manufactures.—Manufactures are rapidly increasing, partly on account of the splendid water-power available, partly because of the opening of the Panama Canal, and partly through the development of trade with Asia, South America, the *Philippines*, and Alaska. The most important are fruit, vegetable, and salmon canning, meat-packing, fruit-drying, flour-milling, the making of condensed milk, the refining of sugar and petroleum, the smelting of ores, ship-building, and the manufacture of lumber products, such as furniture, shingles, laths, and fence pickets.

Cities and Towns.—*San Francisco*, situated on a peninsula lying between San Francisco Bay and the Pacific Ocean, to which it has access through the Golden Gate, is a very busy shipping, commercial, and manufacturing city. It has one of the finest harbors on the continent, and through it passes much of the trade with the Orient. It has also large ship-building yards and many sugar-refineries. Across the bay from San Francisco is *Oakland*, the terminus of several railways from across the mountains.

Los Angeles, with a harbor on the coast, is the commercial metropolis of Southern California. It lies in the midst of the rich fruit district. *Hollywood*, a suburb, is the centre of the moving-picture industry. *Portland*, on the *Willamette River*, is the commercial and manufacturing centre of Oregon. *Seattle*, situated on a splendid harbor on Puget Sound, has had a rapid growth. It has a large shipping trade with Alaska and with China and Japan, and is the terminus for several trans-continental roads. It has an important ship-building industry, as well as many factories. *Tacoma* and *Spokane* are other cities in Washington. The latter is the centre of a large mining district.

TRANSPORTATION AND TRADE

Railway lines cover the United States, running in all directions, east and west, north and south. In fact, the United States has a greater railway mileage than any other country in the world. The Mississippi River, with its tributaries, forms a gigantic system of waterways, which serves the entire region lying between the Rockies on the west and the Appalachians on the east. Lake Michigan lies wholly within the United States, and the southern half of the other Great Lakes belong to that country. Other waterways, such as the *New York Barge Canal* between New York and Buffalo, have greatly helped the trade of the districts through which they pass. In its railways and its waterways the United States has unrivalled advantages for the exchange of goods within its own borders.

The foreign trade of the United States is very great, the British Isles and Canada being the heaviest buyers. The east coast is specially well provided with excellent harbors, and from these the enormous output of natural products and manufactured articles find their way to the markets of the world. On the west coast the growing trade with the Orient takes up the attention of the ports in that section. The one hundred and ten millions of people within the United States require much that other countries can produce and manufacture, so that the import trade is also very great.

TERRITORIES OF THE UNITED STATES

Alaska.—The peninsula of Alaska occupies the north-western corner of North America. It includes the *Aleutian Islands*, which stretch in a long chain over a thousand miles out into the Pacific Ocean.

The surface is very mountainous. The Rocky Mountain Highland grows narrower there and contains several high peaks, such as *Mount McKinley* and *Mount St. Elias.* The Yukon River, which has its rise in Canada, extends across the entire territory and empties into Bering Sea. The climate is much the same as that of the Yukon Territory, except that the warm ocean winds make the climate of the coastal regions much milder. Many of the harbors along the coast are free from ice all the year round.

The greatest wealth of Alaska lies in its minerals. Gold, silver, and copper are the principal, but there is plenty of coal and petroleum. The lack of railways, however, makes it difficult to transport the coal. The bays along the coast abound with salmon, which are caught and canned for shipment. Fish-oil forms an important article of export. Furs do not now bring in the return they formerly did, owing to the almost total destruction of the seal herd on the *Pribilof Islands.* While there are large forests, little timber is cut. During the short summer it is possible to raise potatoes and other vegetables. There are many large herds of reindeer in the territory.

Nome, *Juneau*, and *Wrangell* are the principal places on the coast, while *Fairbanks* is an important centre in the interior.

The Hawaiian Islands.—Although, strictly speaking, the Hawaiian Islands belong to the islands of the Pacific, yet, as they are a possession of the United States and lie to the westward of the coast of that country, it is more convenient to treat them here.

The group consists of eight large islands and a number of smaller ones, the total area being about 6,500 square miles. They are volcanic in their origin, some of the mountains rising to a height of 14,000 feet. The most celebrated of the mountains is *Mauna Loa*, on the slope of which is the crater of *Kilauea.* This crater is about three miles across, and in it lies a lake of molten lava, which the Hawaiians have fitly named "The House of Everlasting Burning."

As the islands lie within the tropics and are surrounded by the ocean, they have a mild and even climate. The winds from the north-east bring plenty of moisture, although on the leeward side of the mountains there is much arid land. The winters are wet and the summers dry. The soil is very fertile. Sugar-cane, tobacco, cotton, honey, rice, coffee, and tropical fruits, especially the pineapple, are the principal products. Over a billion pounds of raw sugar are exported annually from the islands.

The capital and most important city is *Honolulu*. It has a magnificent harbor and is a port of call and coaling-station for vessels crossing the Pacific to and from the Orient. Honolulu is a beautiful city and is a favorite resort for tourists.

Helps.—Mark on an outline map the boundaries of the United States. How does the United States compare in size with Canada? Mark the coast-line. Compare the eastern with the western coast. Why are there so few good harbors on the western coast? Into what physical regions is the United States divided? Mark each of these on the map. What are the chief natural resources of each? the chief industries? Compare these physical divisions, the one with the other, in regard to (*a*) surface; (*b*) climate; (*c*) natural resources; (*d*) industries. Locate on the map the following: (*a*) the cotton belt; (*b*) the corn belt; (*c*) the wheat belt; (*d*) the cattle belt; (*e*) the fruit belts; (*f*) the timber belts; (*g*) the iron belt; (*h*) the coal belt; (*i*) the oil belts; (*j*) the chief manufacturing belts. Why is the United States such a great manufacturing country?

Compare the timber-supply of the United States with that of Canada. Compare the wheat area and production of the two countries. Name and locate on your map the chief rivers of the United States, marking through what physical division or divisions each flows. What is the importance of each? Compare the rivers of the east coast with those of the west coast. Compare the rivers of the east and west coast with those of the Central Plain. Locate on the map the most important inland waterways. Into how many states is the United States divided? Locate each state in relation to the physical divisions of the country. From your knowledge of the physical divisions and their products, make out a list of the industries of each state. Which would you take to be the five most important states?

How do you account for the dense population of the United States? Why does it make such a strong appeal to emigrants from Europe? Mark on your map the most important railways of the United States. Make a list of the ten largest cities in the United States, note the location of each, and state as many reasons as you can for its growth. What is the importance of New York, Philadelphia, Los Angeles, Detroit, Boston, Seattle, Minneapolis, New Orleans, Buffalo, Pittsburgh, and St. Louis? What would be the effect on United States commerce of deepening the River St. Lawrence?

Make out a list of the chief natural products of the United States. Make out a list of the chief manufactured articles. From these two lists what would you judge to be the chief exports of the United States? From these lists what would you judge to be the chief products and articles that it would be necessary for the United States to import? Why is the internal trade of the United States so large? What advantages has the United States for internal trade? for foreign trade? What are the chief imports of the United States from Canada?

THE LESSER COUNTRIES

MEXICO

Position, Extent, and People.—Mexico, including the peninsulas of *Yucatan* and *Lower California*, lies between the United States on the north and Central America on the south. In area it is about one-fifth as large as Canada, but it has a population almost twice as great.

A large part of the population of Mexico is made up of the *peons*, or laboring class. The peons are poor, lazy, and ignorant. They are the workers in the mines, in the fields, and on the ranches. They live in houses built of sun-dried bricks, called *adobes*, usually with one room for the whole family. The ruling class in Mexico are the descendants of the original Spanish settlers. The foreign population, who live principally in the cities and in the mining districts, have been attracted by the commercial and mining activities of the country.

Surface and Climate.—The surface of Mexico is divided naturally into four distinct sections. First, there is the coastal plain along the Gulf of Mexico, which in Yucatan widens out until it includes the greater part of the peninsula. Along the Pacific coast there is a similar plain. Rising abruptly from the plain on both the eastern and western sides is a series of rugged mountains, which gradually come together as the country narrows towards the south. Lying between these ranges is a high plateau, which occupies the greater part of the interior. This plateau is varied by low mountain ranges. South of the central plateau is a region of high mountains and lofty, volcanic peaks. The highest of these, *Mount Orizaba* (Star Mountain) and *Mount*

Popocatepetl (Smoking Mountain) are covered with snow and ice even during the hottest months of the year. The peninsula of Lower California is mountainous and almost a desert.

The rivers, with the exception of the *Rio Grande,* are short, and owing to their rapid fall from the mountains close to the coast, are of little use for navigation. Dotting the central plateau are thousands of small, shallow lakes, which add much to the beauty of the scenery. The coast-line is regular on both the eastern and western sides, with few bays and only two or three good harbors.

The climate depends upon the altitude and the distance from the sea, so that the traveller experiences many changes in temperature as he passes through the country. On the coastal plain the climate is tropical, while that of the plateau is temperate. Again, in the coastal region the rainfall is abundant, while many parts of the plateau are so dry that the crops require the aid of irrigation. The high mountain regions to the south are, of course, very cold.

Industries.—Although the farms of Mexico yield heavy crops of cereals, fruits, cotton, tobacco, and other products, the chief source of the country's wealth is in its mines. Some of the gold and silver mines, still extraordinarily rich, were worked by the Indians before the Spaniards conquered the country. Valuable minerals are found from one end of Mexico to the other. At one place there is a mountain which is a solid mass of iron ore. Productive petroleum wells are in operation on the coastal plain. There are rich mines of copper, zinc, lead, sulphur, and quicksilver. Most of the precious and semi-precious stones are found, such as emeralds, opals, jasper, garnets, topazes, and turquoises. Until recent years the mining methods employed were exceedingly crude, and transportation was difficult, so that the industry did not prosper as it might have done. Now, with the introduction of modern methods and the building of railways, mining has made great strides forward. The mineral products at present form over three-quarters of the total exports of the country.

Manufacturing has not been one of the leading industries of Mexico. For this the ignorance and the laziness of the people are partly responsible, but the main reason is the absence of coal. Of late years, however, water-power has been developed, and more factories are being built. The most important manufactures are cotton, tobacco, earthenware, leather, and iron and steel products. In the homes of the people, rugs, blankets, hats, hammocks, and ornamental leather goods are manufactured, and they find a ready sale, especially to the travelling public.

A Fruit Market in Mexico

Cities and Towns.—The city of *Mexico* the capital and largest city, nestles among the mountains at the southern end of the central plateau. The cathedral is one of the most beautiful buildings in America. Near at hand on the plateau is *Puebla,* one of the oldest of the Spanish cities and now a manufacturing centre. *Vera Cruz,* owing to the recent deepening of its harbor, has become the chief port on the Gulf of Mexico, and *Tampico* also has a considerable trade, especially in petroleum. *Acapulco*, on the Pacific side, has an excellent harbor and is a coaling-station for vessels.

Helps.—Trace the boundaries of Mexico. Of what great natural region of North America is it a part? Describe the surface. Name the principal mountains and mountain-peaks. What effect has the elevation on the climate? Into what climatic zones is the country divided? Locate these on the map. Account for them. Account for the arid soil of certain parts. Describe the methods of farming. To what extent is irrigation used? Why is the plateau so dry? What are the principal natural resources? How far has each of these been developed? Why is not Mexico more prosperous? Illustrate your answer by reference to the mining industry. What are the chief ports? What is the importance of the city of Mexico?

CENTRAL AMERICA

Lying between Mexico and South America on the narrow neck of land known as *Central America* are six small republics—*Guatemala*, *Honduras*, *Salvador*, *Nicaragua*, *Costa Rica*, and *Panama*—and one British colony, *British Honduras*. All of these touch upon both the Pacific Ocean and the Caribbean Sea, with the exception of British Honduras, which lies along the Caribbean Sea, and Salvador, which has its coast-line on the Pacific Ocean. To these must be added the *Panama Canal Zone*, which belongs to the United States. Guatemala is the largest of the republics and Salvador the smallest. Central America has an area about half as great as that of Ontario, but it has a population of over six millions.

The population of Central America is made up of whites of Spanish descent, Indians, and half-breeds. There are many Negroes. The Spanish language is spoken, and Spanish customs prevail. Progress has been much hindered by the ignorance of the people and by the unsteady character of the governments. Revolutions are frequent and also quarrels among the republics themselves.

Surface and Climate.—The surface of Central America, except in Panama, is extremely mountainous, with the highest elevation near the Pacific coast. On the higher mountains are huge forests of oak and pine. About forty active volcanoes are known, and destructive earthquakes are frequent. The slope towards the west is somewhat steep, but towards the east the descent is more gentle. Many plateaus and deep valleys are found among the mountains. The coastal plain on the east is low, swampy, and very unhealthy. Running down to the sea from the highlands are numerous rivers, so that the country is well watered.

As Central America lies between the Tropic of Cancer and the equator, the climate is tropical. The steady north-east winds blow over the country and bring an abundance of rain, more abundant on the east coast than on the west coast. The climate is divided into *hot*, *temperate*, and *cool* zones, the divisions being determined by the elevation of the land. The most agreeable climate is found at an elevation of about 6,000 feet.

Industries.—The lowlands of Central America are covered by a dense forest. In these forests mahogany, rosewood, logwood, and rubber trees abound. The cutting of mahogany alone employs thousands of the poorer natives. Bananas are cultivated and exported in immense quantities, as are also other tropical fruits such as oranges, and coconuts. Coffee, sugar-cane, cacao, and tobacco are largely grown. There are large stretches of pasture-land among the mountains, especially in Honduras and Nicaragua, on which feed herds of cattle, horses, and sheep. Beans, corn, and potatoes are raised mainly for home use. Gold and silver are the principal minerals, but the mines are little worked. Very little manufacturing is carried on. The trade of the Central American republics is mainly with the United States of America.

Cities and Towns.—The cities and towns are not large, and there are but few that are worth mentioning. The city of *Guatemala*, the largest city in Central America lies in the centre of the great Guatemalan coffee district. *Puerto Barrios* is the port of shipment. *Libertas* in San Salvador, *Bluefields* and *Corinto* in Nicaragua, *Punta Arenas* in Costa Rica, and *Panama* in Panama are other important places. The latter city is connected by rail with *Colon*.

The Panama Canal Zone.—From the time Panama was first crossed men had talked of the possibility of cutting a canal through this narrow neck of land. If this could be done, the long voyage between Europe and China, Japan, and India would be materially shortened. In addition, the dangerous passage around Cape Horn would be avoided. The first attempt to realize this dream was made by France, but met with no success. In 1903, however, the United States, which desired to have a short route from its eastern to its western coast, obtained the grant of a narrow zone of land from the Panama Republic, and undertook to dig the canal at its own expense. In the cutting of the canal an immense number of men were employed, and an enormous amount of material was used. Part of the route of the canal is through *Gatun Lake*, which is eighty-five feet above sea-level. Locks at each side of the lake were, therefore, necessary. At the end of ten years the work was completed.

The Panama Canal is of great importance to Canada, as it very much shortens the sea-route between Montreal, Quebec, St. John and Halifax on the Atlantic and Victoria, Vancouver, and Prince Rupert on the Pacific. The sea-route to Asia from the eastern coast of Canada is also very much shortened, as is also the distance by sea between the western coast of Canada and Europe. This will enable the manufactures of Ontario and Quebec to reach Asia at a much cheaper rate, and will also enable much of our Western wheat to be shipped by an all-sea route to Great Britain from Vancouver and Prince Rupert.

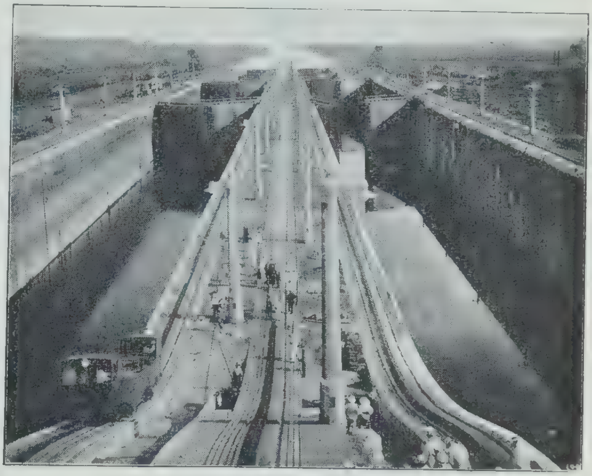
Colon, in Panama at the eastern entrance, and *Balboa*, within the Zone, at the western entrance, are supply and repairing stations for ships entering and leaving the canal.

Helps.—Name the states of Central America. Locate each on the map. Find out what you can about their relations the one to the other. Describe the surface and show its effect on the climate. Show how the climate affects the industries. What are the chief products? Tell what you can about the people. What is the chief hindrance to the development of Central America? Describe the Panama Canal. What is its importance to Canada? Locate the chief cities.

THE WEST INDIES

The Islands in General.—Lying to the east of Mexico and Central America and to the north of South America are several groups of islands, large and small, known as the *West Indies*. The four largest islands—*Cuba*, *Haiti*, *Jamaica*, and *Porto Rico*—are frequently called the *Greater Antilles*, while the *Lesser Antilles* include all the smaller islands with the exception of the *Bahamas*. The islands entirely enclose the Caribbean Sea, and, with the peninsulas of Florida and Yucatan, almost shut in the Gulf of Mexico.

For the most part the West Indies belong to various European powers, but *Haiti*, which includes the two Negro republics of *Haiti* and *Dominica*, and Cuba are independent. Jamaica, the Bahamas, the *Barbadoes*, the *Leeward Islands*, the *Windward Islands*, *Trinidad*, *Tobago*, and a number of smaller islands are part of our own Empire. Porto Rico and the small islands of *St. Thomas*, *St. Croix*, and *St. John* belong to the United States. France owns *Guadeloupe* and *Martinique*, and there are some small islands under the rule of Holland.



The Panama Canal

The population of the West Indies is largely made up of Negroes, but in Trinidad there are many East Indians, who were brought there to work on the sugar plantations. The whites are mainly English, Spanish, and French, with a sprinkling of Portuguese. With the exception of the Bahamas, all the islands are mountainous, although on some of the larger islands there are low coastal plains. There are many coral islands, some raised above the surface and some still being formed. Many of the mountains are volcanic, but in only a few cases in recent years has there been any activity.

The climate is tropical. The islands lie in the path of the steady north-east winds, so that the north-eastern parts have an abundance of rain, while the western and southern parts are not so well provided with moisture. The rainy season begins about the end of the summer. From July to October some of the islands are often visited by tropical hurricanes, which do immense damage and are dreaded by the inhabitants.

A Scene in the West Indies

The products of the West Indies are such as we should expect from their tropical situation. The chief industry is the growing of sugar-cane, together with the manufacture of sugar, rum, and molasses. Cotton growing has increased largely during recent years, particularly on the British islands. Cocoa and tobacco are extensively cultivated, as are also coffee, rice, and arrowroot on some of the islands. All the tropical fruits grow in abundance, particularly bananas, in which an enormous trade is carried on with the United States and Great Britain.

Cuba.—The republic of Cuba is the largest of the islands of the West India group. The people are largely of Spanish descent, with a large number of Negroes and half-breeds. The surface is very mountainous, but there are large coastal plains and an extensive interior lowland. Vegetation is exceedingly luxuriant. The forests contain valuable woods, such as mahogany, ebony, and cedar. In addition to the usual tropical products, tobacco is grown in large quantities. There is an enormous export trade in cigars. Some copper and iron are mined.

There are many excellent harbors all along the coast, the most important of which is *Havana*, the capital, a very beautiful and healthful city. *Santiago*, on the south side of the island, has also a good harbor.

Porto Rico.—Porto Rico is a territory of the United States of America. The population is a little over a million and a quarter, about three-fifths of whom are white, the remainder being Negroes and half-breeds.

A range of mountains runs through the island from east to west, but there are large coastal plains. Sugar, tobacco, coffee, rice, cotton, and vegetables are the chief products. Tropical fruits are largely exported. There is little manufacturing, except sugar, cigars, and cigarettes, and but little mining is carried on, although there are large deposits of gold, copper, iron, and nickel. *San Juan*, the capital, and *Ponce* are the principal cities.

Haiti.—The island of Haiti lies to the east of Cuba. It is divided into two Negro republics, *Haiti* and *Santo Domingo*. The island is about 400 miles in length, with a breadth varying from sixty to 150 miles. The surface is mountainous, with long, deep valleys and many lakes. Covering the mountains are dense forests, which yield valuable timber. The soil is very fertile and yields coffee, cotton, sugar-cane, and tobacco. *Port au Prince* is the chief city of Haiti, and *Santo Domingo* is the capital of the Dominican Republic. *Puerto Plata* is also a place of some importance.

The British West Indies.—The islands which form part of the British Empire are dealt with fully on pages 248 to 251.

Helps.—Locate carefully on your map each of the islands of the West India group. Note how far the islands are apart. How many of the islands lie without the tropics? To what nation does each belong? What is the general character of the surface of the islands? What are the most important industries?

THE CONTINENT OF SOUTH AMERICA

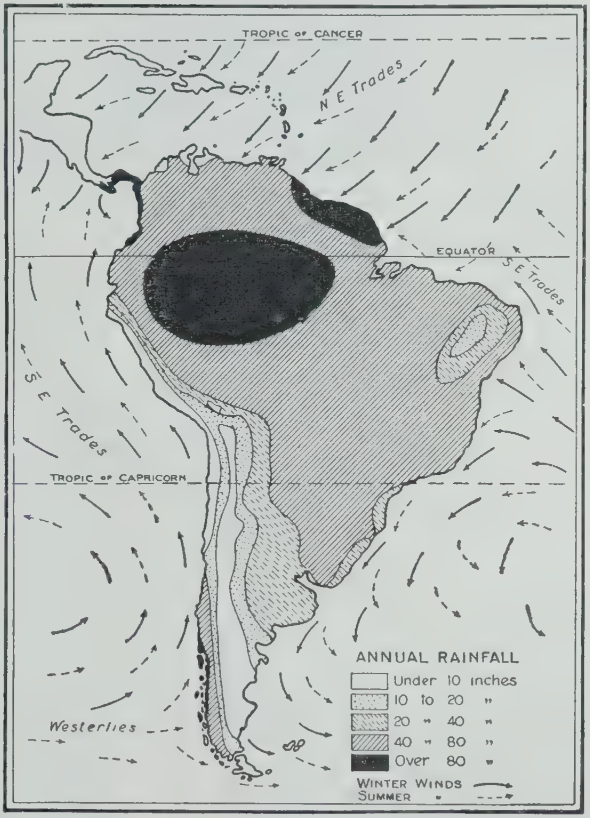
THE CONTINENT AS A WHOLE

Map Questions.—What ocean is east of South America? west of it? At what cape do they meet? What large sea is between South America and the West Indies? What is the name of the narrow land bridge connecting North and South America? What large island forms the southern tip of South America? What strait separates this island from the mainland? What group of islands is almost due east of the Atlantic entrance to the *Strait of Magellan?* What is the general shape of both North and South America? Which continent has the more regular coast-line? Trace the coast-line, noting its irregularities. Compare the east and west coasts as to regularity of outline. Where is *Cape St. Roque? Bahia Blanca? Gulf of Guayaquil?*

How many highlands are there in South America? Name them. Which corresponds to the Rocky Mountain Highland in North America? To the Appalachian Highland? To the Laurentian Highland? Near what ocean is the highest highland of both continents?

In what zone is Alberta? In what direction from Calgary is South America? In what zones is South America? What part of South America is in the South Temperate Zone? What part in the Torrid Zone? Which part is larger?

Find on the map a large river flowing near the equator. In what highland does it rise? In what direction does it flow? Which has the hotter climate, the valley of the *Amazon* or that of the St. Lawrence? Why? Where is the *Orinoco River?* What highland partly separates the valley of the Orinoco River from that of the Amazon River? Into what ocean do both the Orinoco River and the Amazon River empty? Find the *Plata River.* What large river empties into it? Between what highlands does the *Parana River* flow? Into what ocean does it empty? Why are there no large rivers flowing into the Pacific?



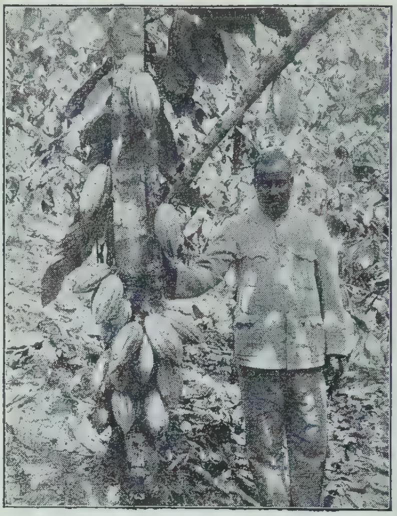
Rainfall and Wind Map of South America

How many countries are there in South America? Name those which front the Pacific Ocean. What countries have an Atlantic coast-line? What ones front upon the *Caribbean Sea?* Name those which are entirely inland countries. What countries of South America are entirely within the Torrid Zone? What countries are partly in the Torrid and partly in the South Temperate Zone? Which country of South America is entirely in the South Temperate Zone?

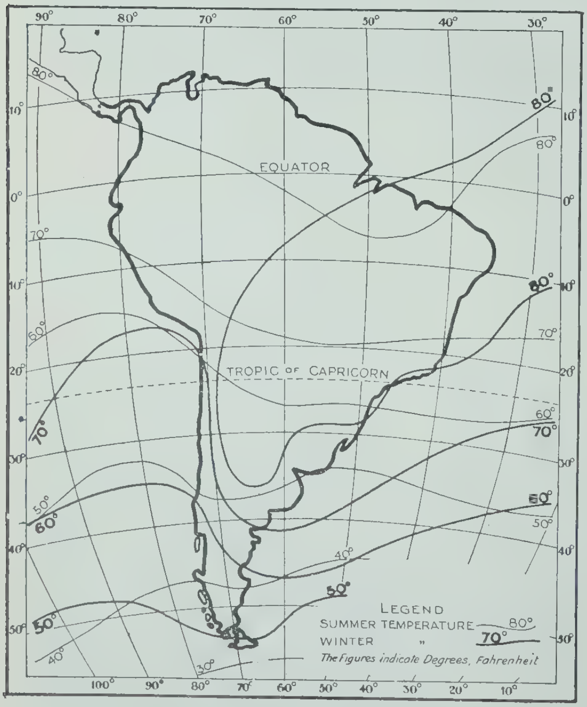
Shape and Size.—South America, like its sister continent of North America, is triangular in shape, being broad in the north and tapering towards the south. Its length is about 4,600 miles and its greatest breadth about 3,200 miles. The northern continent is, however, the larger of the two by a million square miles.

Coast-Line.—The coast-line is fairly regular. On the western coast there is only one great indentation, the *Gulf of Guayaquil,* just south of the equator. The southern part of the western coast is much indented with long inlets and is fringed with many small islands. The southern tip of the continent is formed by the large island of *Tierra del Fuego,* or Land of Fire. On the south-east coast, the southern portion has several large bays and gulfs, the most important of which is *Bahia Blanca.* Farther north is the wide estuary called the *Plata,* into which two large rivers, the *Parana* and the *Uruguay,* pour their waters. On the northern and north-eastern coast the most important break is made by the mouth of the *Amazon*, truly called "the King of Rivers," as it is by far the largest river in the world.

Structure.—Along the whole western side of the continent there is a broad belt of lofty mountain chains, which turns to the east at the far north and ends at the shore of the Caribbean Sea. These are the mighty *Andes Mountains*, the longest continuous mountain range in the world. Many of the peaks tower high above the lower ridges. The loftiest of them are crowned with eternal snow. Some are rough and jagged in outline; others form regular cones. The latter are volcanic peaks, which have been built up around volcanoes by the lava poured out during eruptions. In Ecuador alone there are eighteen peaks over 15,000 feet in height.



The Cacao Tree

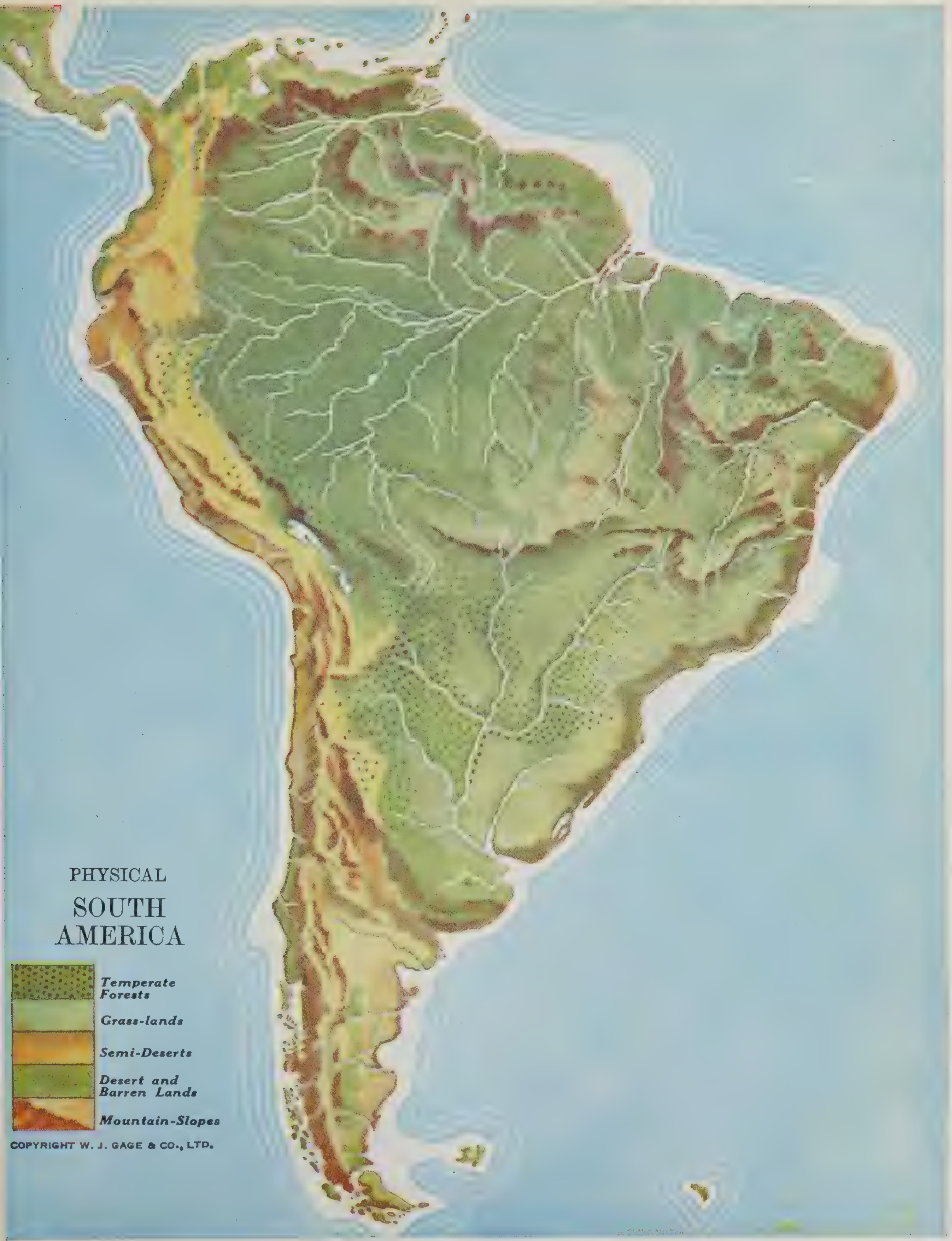


Temperature Map of South America

In the central and northern part of the Andes the belt of mountainous country is widest. Broad plateaus lie between parallel mountain chains. Farther south the mountains narrow, and instead of wide tablelands there are several long, narrow valleys running parallel with the coast. Between the mountains and the sea lies a narrow coastal plain along the whole length of the continent, except at the southern extremity, where the mountains rise right from the shore.

South America has other mountains, small, indeed, when compared with the mighty Andes, but still of considerable height and extent. On the north-east coast is a mountainous district, lying between the valleys of the Amazon and *Orinoco* Rivers. On the north it is separated from the Northern Andes by a wide plain. These mountains are the *Guiana Highlands*. The *Brazilian Highlands* are much more extensive. They stretch from the basin of the Parana River to *Cape St. Roque* and extend for a long distance inland.

Once the mountain areas are located, the lowlands may easily be traced. Begin at the mouth of the Orinoco River. It flows through a plain which is about 300 miles wide. This plain separates the Guiana Highlands from the Andes. At first the general direction of the river is east and west, but in its upper courses it is north and south. The north and south extensions of the *Orinoco Plain* connect it with the *Great Central Plain* of the continent, which extends from the mouth of the Amazon and from the Brazilian Highlands to the eastern slopes of the Andes. This Central Plain narrows with the continent towards the south. South of the Brazilian Highlands the lowland extends from the foothills of the Andes right to the Atlantic Ocean. In addition to these vast plains are the narrow coastal plains lying between the Andes Mountains and the



PHYSICAL
SOUTH
AMERICA

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Pacific Ocean and between the Guiana and Brazilian Highlands and the Atlantic Ocean.

The Western Coast.—From the *Isthmus of Panama* to the Gulf of Guayaquil, there is a heavy tropical rainfall over the whole coastal plain and the western mountain-slopes. It is greatest in summer, for then all the northern part of the continent is heated to a high degree by the direct rays of the sun and forms an area of low pressure towards which the winds blow from the ocean. In this section is a dense tropical forest growing in the rich, moist soil. Bamboos of many varieties abound, and palms are numerous.

Back in the mountains the river valleys have a more temperate climate, since they are high above the level of the sea. In them sugar-cane, bananas, lemons, and oranges grow well. More important still is the cacao tree. This tree grows from fifteen to thirty feet high and looks much like a big lilac bush. It bears a fruit about the size of a large cucumber, containing thirty or more seeds embedded in white pulp. Each seed is about the size of a lima bean and is dark-brown in color. From these seeds chocolate and cocoa are manufactured. Cacao trees are found almost everywhere in tropical South America, and their cultivation is one of the great industries of the continent.

Ploughing in the Central Andes

For almost 2,000 miles south from the Gulf of Guayaquil the coastal plain is a long strip of sandy desert. This part of South America lies in the belt of the steady south-east winds, which bring abundant rain to the eastern coast of the continent. By the time they have reached the Andes, they have lost much of their moisture, and what is left is condensed as snow upon the lofty mountain-peaks. Therefore, the land lying to the west of the mountains is parched.

Here and there the long desert strip is broken by rivers, which, fed by the melting snow of the Andes, have sufficient volume of water to force their way across the sand into the Pacific. The valleys of these rivers are extremely fertile. In them can be seen green fields of sugar-cane, looking much like fields of Indian corn, and fields of rice, of tobacco, and of cotton, as well as orchards with almost every variety of tropical fruit. The fields are irrigated by means of ditches filled with water from the rivers. In this rainless land the houses are built of mud. The Indian farm laborers live in huts made of cane plastered with mud. Even in the cities the houses are made of sun-dried bricks. Such houses give shelter from the sun, and more substantial ones are not needed.

The desert, apart from the river valleys, is not entirely valueless. Part of it is underlaid by a vast bed of mineral called nitrate of soda. Many men work in the nitrate beds, blasting out the mineral and preparing it for shipment. Much of it is used to make nitric acid, but more is used to fertilize land. Iodine, so well known in medicine, is obtained from nitrate of soda. Another curious product of this district is borax. In the *Lake of Ascotan*, in *Chile*, the water is filled with it. The borax crystallizes at the edge of the water. Thousands of tons of it are gathered annually and shipped all over the world, to be used in making glass and cement and for glazing pottery. Borax is also useful in medicine.

The west coast, in the southern part of the continent, lies within the belt of the steady west winds. It is, therefore, well watered, for these winds yield their moisture when cooled by the wall of the Andes. This rough and rugged coast is heavily timbered with pines. Few people except Indians live in this part of the continent.

The Andes.—The Andes are full of mineral wealth. Gold and silver are abundant in the northern ranges. Tin and copper are also plentiful.

Although several railways have been built from the coast towns to the most important mining districts, much of the transport of goods over the mountains is done by llamas.

Llamas
Only the male llamas are used as beasts of burden.

The llama is an odd-looking animal, about four feet six inches in height, with a long neck, a head like that of the camel, and long, slender legs something like those of the deer. It is covered with straight hair, sometimes all white, sometimes blotched with black. The llama can carry a load of one hundred pounds and is as sure-footed as a goat.

Closely related to the llama, but somewhat smaller is the alpaca. Its hair is long and fine, and is used for weaving fine cloth, but the animal is not made use of as a beast of burden. Both the llama and the alpaca are descended from the guanaco, which still runs wild among the mountains. In the Northern Andes is found, also, the vicuña, an untamed cousin of the llama and the alpaca. Its yellow coat is as smooth and as soft as velvet, but, owing to its wild nature and its mountain home, it is very difficult to capture or kill.

A Condor
Note the white ruff around the neck.

The Andes are the home of the biggest bird that flies. This is the condor, a huge vulture. The condors soar high over the mountain-peaks until they see some animal dead or dying on the ground. They then come down to the feast, for, like all vultures, they are carrion birds and prefer to gorge upon dead carcasses rather than to catch their prey alive.

The mountain valleys of the Andes are fertile farm-lands. The great plateaus, however, are not so fertile, and some of them are so high and cold that even our hardy northern cereals will not mature upon them. These plateaus are the original home of the potato, which grows wild in many places there. From this region the potato has been taken to all lands and now forms one of the great food crops of the world. The Andean potatoes are not much like those we grow in Canada. They are not much larger than walnuts and of such poor appearance that no Canadian farmer could sell them. Yet they are one of the principal articles of diet of the Indians who live on these bleak plateaus.

The eastern slopes of the Andes are covered with forest, from the north of the continent down a little farther than *Valparaiso*. Two important medicinal plants are found there in profusion. One is the cinchona, from the bark of which is made quinine, so useful a medicine in fever cases. The other is the coca, a shrub about five feet high. From its leaves comes cocaine, which is useful as an anaesthetic.

The Guiana Highlands.—The Guiana Highlands lie in the belt of the steady northeast winds. When these winds reach the land, they are laden with moisture absorbed during their long journey over the Atlantic. This is condensed over the northern slope of the Guiana Highlands, which have a very heavy rainfall. The southern slope is much drier, although it also receives some rain. The Highlands are little known. Much of them is densely forested, and much consists of wide, grassy plains. The coast-lands are very fertile, and sugar-cane, rice, and coffee are grown there.

The Brazilian Highlands.—The south-east winds sweep over the Brazilian Highlands and water them well. The mountains in this region are not high enough to condense all the moisture from the winds, which, therefore, bring rain to almost the entire breadth of the continent.

The land upon the eastern slopes of these Highlands is a rich, red clay, and the soil and climate are especially well suited to the coffee-bush. In this section is grown much of the coffee which is used by the people of Europe and America. In its wild state the coffee-bush grows to a height of eighteen feet, but, when cultivated, it is kept pruned to seven or eight feet. It bears a fruit something like a cranberry. The red berries grow in clusters, each berry containing two seeds. These are the coffee-beans, so familiar to us all.

Forest and River, South America

Rivers and River Valleys.—There is an extremely heavy rainfall over tropical South America, for the ocean winds penetrate right to the Andes. Most of the area drained by the Amazon and its tributaries has an average rainfall of over six feet annually. As has been said, there is also a heavy rainfall upon both the Guiana and the Brazilian Highlands. It is obvious that a country with so much rain must have huge rivers to carry back to the sea the enormous quantity of water brought by the winds.

The Highlands of South America divide the country into three great drainage areas. Farthest to the north, lying between the Guiana Highlands and the Northern Andes, is the basin drained by the Orinoco River and its tributaries. The Amazon and its countless affluents drain the vast territory lying between the Guiana Highlands and the Brazilian Highlands. Farther to the south the great river system, of which the Parana River is the chief, drains the country situated between the Brazilian Highlands and the Andes.

The Orinoco Basin.—The rain which falls upon the northern slopes of the Guiana Highlands and upon the eastern slopes of the Northern Andes runs down in many streams towards the lowland which separates the two mountain districts. These streams unite to form the Orinoco River and its tributaries. The Orinoco itself is navigable for 1,200 miles, and is said to have at least four hundred branches which are navigable for small vessels.

At its mouth the Orinoco forms a large delta, through which the river passes by several channels. The delta is covered with dense tropical jungle. Farther inland its valley broadens out into wide plains, covered with tall, coarse grass. There great herds of cattle roam, finding abundant pasture on the open plains. These plains are called the *llanos* of the Orinoco.

The Amazon Basin.—The rain which falls upon the Andes south of the llanos, and that which falls on the northern slopes of the Brazilian Highlands and upon the southern slopes of the Guiana Highlands, as well as that which falls upon the whole vast plain enclosed by these mountains, all drains into the Amazon River. In the rainy season the river is like a long inland sea, fifteen to one hundred miles wide. During that season it overflows its banks, and much of the forest for miles inland is flooded, so that only the tree-tops stand above the water. Even in the dry season, its breadth is from three to five miles for 2,000 miles back from the Atlantic. Into this great river many tributaries pour their waters and form a navigable network of rivers, which covers the greater part of the interior of the continent.

The valley of the Amazon is the most extensive region of dense forest on the face of the earth. The banks of the rivers are lined with tall forest trees, interlaced with tangled creepers so closely that a man can penetrate the forest only by actually chopping a pathway before him as he goes.

The most important plant of the *selvas*, as these dense forests are called, is the rubber tree. It is a stately forest tree, with whitish gray bark, and with leaves somewhat like those of the ash. The Indians who collect the rubber cut gashes in the bark of the tree and set little tin cups to receive the white, milky sap which drips out from the cuts. When enough is gathered, the Indian builds a fire of palm-nuts, which emit a very dense smoke. Then he dips a flat paddle into the sap and holds it in the smoke, turning it so that none of the sticky sap can drip from the paddle. The sap thickens and turns dark-colored in the smoke. This is repeated until a big lump of rubber has been formed. This is the raw material which is used for so many purposes in our own land.

A Rubber Tree in Brazil
Note the size of the tree.

Much of the basin of the Amazon has never been explored, owing to the impenetrable forest with which it is covered. Its inhabitants are, for the most part, tribes of uncivilized Indians.

The Parana Basin.—The rain which falls upon the southern slopes of the Brazilian Highlands, and upon the eastern slopes of the Andes south of the Amazon Basin, flows into the lowland between these two mountain areas and forms another great river system. The two main rivers of this system are the Parana and the *Paraguay*. These two waterways unite and, with the Uruguay River, flow into the great estuary called the *Plata*, which is 200 miles long, and 100 wide at its mouth.

To the west of the Paraguay River lies a great palm forest, broken here and there by long stretches of grass-land. The country east of this river is heavily timbered. In this forest is found the shrub which provides much of South America with its most popular beverage. This is *maté*, or Paraguay tea. It is made from the young, tender leaves of the maté bushes. It is a bitter drink, but very stimulating.

Towards the mouth of the Parana River the forests gradually become less dense, until the plain becomes a treeless grass-land. These plains are called the *pampas*. It is a country of great estates, where land is sold, not by the acre, but by the square league, a block containing about 6,000 acres. On the Pampas are great herds of cattle and enormous flocks of sheep. Horses are so plentiful that many are slaughtered just for their hides. The better-watered sections of the pampas make fertile farms, and much wheat is grown on them.

Patagonia.—The pampas cover the eastern lowland from the Parana River to Bahia Blanca. South of this we come again into the belt of the steady west winds, which cannot bring rain over the Andes to the eastern plain. Therefore, this district, known as *Patagonia*, is almost a desert. Here and there are thorn bushes, and in some places

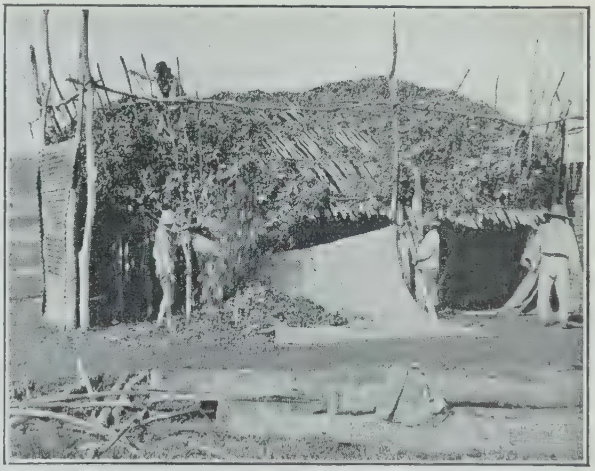


Photo from Ewing Galloway, N.Y.

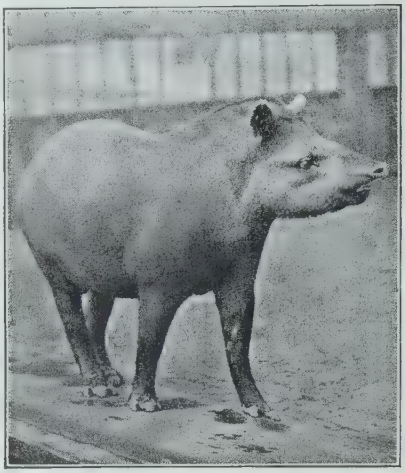
Drying Maté
The workmen are here removing the leaves from the drying shed. The young leaves of the bush must first be carefully dried.

there is scanty grass. There are scattered sheep farms along the coast.

Animals.—The rivers of South America swarm with life. There are numberless alligators, and many varieties of fish, some of which are huge creatures ten feet long. The Indians eat the tails of young alligators, and travellers who have tasted this dish speak well of it. Turtles are extremely abundant, and many of them are very large. Their flesh is good to eat. The Indians also use their eggs as food, and prepare an oil from them for cooking and for fuel.

The forests are full of snakes, many of them poisonous. The largest snake found in South America is the anaconda, which crushes its prey to death.

The jaguar and the puma are beasts of prey which correspond to the tiger and the lion of the Old World. They are, however, not quite so large and fierce. They seldom molest man, but they often attack the flocks and herds of the ranchers. The tapir is peculiar to South America. It is an animal about the size of a pony, with a head shaped somewhat like a pig's, but with a much longer upper lip. It is very timid and hard to shoot. More dangerous are the herds of little wild pigs called peccaries. These beasts are very ferocious, and a drove of them is more dangerous to meet than either a jaguar or a puma.



A Tapir

The tapirs are hunted for their tough hides.

In the grass-lands to the west of the Paraguay River are herds of antelopes and deer, which are hunted by the uncivilized Indians who still live in this region. There, too, are many armadillos, curious burrowing animals found in many parts of South America. The armadillo has a shell like a turtle. The flesh is considered dainty food by the natives.

South America is rich in bird life. There are many varieties of parrots of bright colors. The toucan is a brilliant bird of red and blue, with a heavy, hooked bill. Vultures are common everywhere. The Guiana Highlands are noted for their humming-birds, which flash from flower to flower like living jewels of topaz, ruby, or emerald.

Over the pampas roam flocks of rheas, birds very like the ostrich, but without plumes. The natives of the Argentine hunt the rhea on horseback with the "bolas," a thong of leather eight feet in length with a weight at each end. As soon as the hunter is near enough, he throws the bolas, which winds itself around the legs of the bird and brings it to the ground. So much is the rhea esteemed by the natives as food that, like our buffalo, it is in danger of becoming extinct.

People.—The original population of South America was, of course, Indian. Soon after the discovery of America, the Spaniards conquered the west coast and the southern part of the continent, and the Portuguese formed settlements on the east coast. Then the Portuguese brought over many Negroes from Africa to work on their plantations. Today many of the coast population are descendants of the Spaniards and the Portuguese who intermarried with the Indians. There are also pure-blooded Indians and Negroes and people of mixed Indian and Negro blood. In addition, there are many Europeans of various races, particularly Germans, Italians, and Spaniards, who have gone to South America to settle. In the interior there are few people except Indians.

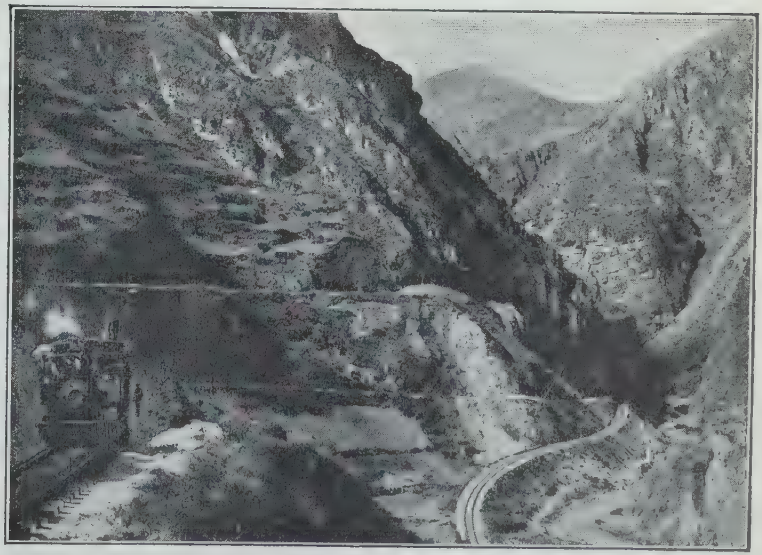
Trade and Commerce.—The natural resources of South America are very great. There are minerals of almost all kinds, including oil; there is timber in great quantities; there are vast areas of fertile soil capable of producing rich and varied crops. Many of these resources are greatly needed by other countries, but for the most part they are undeveloped. The chief reasons for this are lack of transportation and lack of workers. Yet, even under these conditions, the people of South America carry on a very profitable trade. The north-western corner of the continent is producing and exporting oil in large quantities. The cocoa, coffee, and raw sugar produced in the tropical regions brings a very great revenue. The cattle ranches and wheat-farms of the southern regions send meat and grain to Europe to the value of many millions of dollars.

Brazilian Natives
These Indians are natives of Central Brazil. Note the tatooing on their bodies.

The rivers have played a great part in the development of the industries and commerce of the continent. The Amazon is navigable for 3,600 miles from its mouth, and in the whole of its course is fed by tributaries from the north and from the south. These tributaries are also navigable for practically the whole of their courses, so that almost every part of the great Amazon Basin can be easily reached by boat. When we think of the tangled undergrowth of the forests, the pathless swamps, and the ruin wrought by the Amazon in flood, we can realize how impossible it is to build railways into the vast interior of *Brazil.* For all twelve months of the year the rivers take the place of railways and provide easy transportation for the products of the country. The same is more or less true of the other river systems. Even the short, rapid rivers of the western coast are a great help. Although navigable only for very short distances, they provide the means of irrigation for many thousands of square miles of land.

Railways, however, are a necessity. As has been said, llamas are still used in the Andes as they were hundreds of years ago. It is possible to build railways in many places, but money is needed for their construction, and skill and energy are required to push them to completion. A railway, known as the *Transandean*, now crosses the Andes by means of a tunnel and connects the *Argentine* with Chile, but it is the only transcontinental railway in South America. Good harbors, too, are a necessity. There are but few good harbors in South America. Dredging and the building of breakwaters, however, are helping to overcome this hindrance to commerce.

Another great difficulty in the way of the development of commerce is the insect plagues, especially in the tropical sections, and the unsanitary condition of many of the



A Section of the Transandean Railway
The gauge is narrower on the mountain section than on the plains.

cities and towns. It is almost impossible at present for white men to live in some parts of South America.

The bulk of the commerce is with Europe. There are several reasons for this. It is about as far from the east coast of South America to the chief seaports in the northern continent as it is to Europe, and more and better lines of passenger and cargo boats run from Europe to South America than from the United States and Canada. Then, again, the very large number of Europeans settled there find it natural to trade with their own home countries. Further, Europe requires so many South American products that are not needed in North America, such as meats, grains, and fertilizers, that trade has necessarily been forced across the ocean. However, since the opening of the Panama Canal, much of the trade of the west coast has followed that route, and some of this has been diverted to North American ports.

Canada has considerable direct trade with the Atlantic ports of South America, particularly with *British Guiana* and Brazil. There is also a growing trade between the British Columbia ports and those of Chile and *Peru.* Lumber, farm implements, and agricultural products are the chief Canadian exports to the southern continent.

Helps.—Draw a map of South America, placing as accurately as possible the highlands, the lowlands, and the rivers. Note the relation of the rivers to the highlands. Note what determines the direction in which the rivers flow. Compare the selvas, the llanos, and the pampas. What determines their character? Compare the surface of South America with that of North America, noting particularly the points of resemblance. Compare the Andes with the Western Cordillera. Compare the valley of the Amazon with that of the Mississippi. Compare the east coast of South America with the east coast of North America. Compare their west coasts. Compare the location of New York with that of Rio de Janeiro and Boston with Buenos Aires.

Compare the commercial value of the large lakes of the two continents. Do you think it possible that South America should ever be as great commercially and industrially as North America? Compare South America as a grain-growing country with Canada and the United States. What are the mining possibilities of South America? Under what disadvantages does the continent labor at present? How may these be overcome? If there were proper communication between South America and Canada, what would the latter import from South America, and what would she export in return? Draw a map of South America, locating the highlands and rivers; fill in accurately the countries, noting how each is related in position to the other.

THE COUNTRIES OF SOUTH AMERICA

BRAZIL

Brazil, occupying nearly one-half of the continent and with a sea-coast of 6,000 miles, is the largest of the South American countries. Its population, however, is small compared with its vast area, there being only about nine inhabitants to the square mile. The people for the most part live near the coast, and large sections of the interior are almost uninhabited. There is a numerous Negro and Indian population. The whites are mainly of Portuguese descent, but there are large German and Italian settlements.

The northern section of Brazil, an immense plain, lies wholly within the basin of the Amazon River. The southern section is rolling plain, with huge patches of forestlands. This area is drained through the Parana, Paraguay, and other rivers into the Plata. From the highlands of the east, numerous rivers flow into the Atlantic Ocean. The largest of these is the *San Francisco.* The rivers are of great importance to Brazil, as on them depends almost entirely communication with the interior. Unfortunately, most of the rivers of the Brazilian highlands are interrupted by falls, thus making navigation difficult. Except in the coffee districts of the east, there are but few railways.

As the country lies almost wholly within the tropics, the climate is hot and moist, with a very heavy rainfall. In the south, however, within the Temperate Zone, the temperature is lower, and there is less rainfall. Local conditions, also, modify the climate.

For instance, the interior of the Brazilian Highland, on account of being shut off from the Atlantic by the higher hills near the coast, has a very light rainfall, and irrigation is necessary in order to grow crops.

Brazil is amazingly rich in natural resources. Of the forest products, rubber is the most important. Many kinds of valuable woods, such as mahogany, rosewood, and ebony, are found. Other important commercial products obtained from the forests are the vanilla, from which flavoring extracts and perfumes are made; the Brazil wood, from which comes a valuable red dye; the manioc, the root of which, when ground, makes tapioca and also farina, one of the staple articles of food of the people; the ilex; the cacao; and the Brazil nut.

Coffee, sugar, cotton, tobacco, rice, and tropical fruits are the chief agricultural products. More than three-fourths of the coffee used in the world comes from the highlands near *Rio de Janeiro*, where both the soil and the climate are favorable to its production. There are said to be over half a billion coffee trees in Brazil. Cattle are raised on the plains in the extreme north and south.

A Coffee Plantation in Brazil

The most important mineral products are manganese, iron, and diamonds. Brazil is said to have the largest iron-ore deposits in the world, but the product is little mined, on account of the difficulties of transportation. The diamond fields of Brazil yield stones of inferior color and quality, and have decreased in importance since the discovery of superior stones in South Africa. Promising oil fields have lately been discovered.

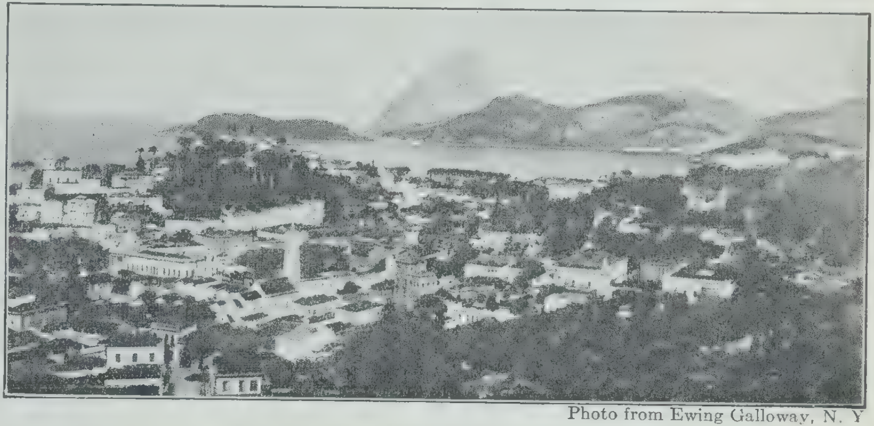


Photo from Ewing Galloway, N. Y

The Entrance to the Bay, Rio de Janeiro

The hills around the harbor make the city wonderfully beautiful.

Manufacturing is not yet a leading industry, although in recent years European settlers have established cotton and woollen factories and, in the south, flour-mills.

Rio de Janeiro, the capital, has a magnificent harbor. With over a million inhabitants, it is the second city of South America. It is very beautiful, and it lies in the midst of fine agricultural lands and coffee plantations. *Sao Paulo*, about 2,000 feet above the sea in the centre of the coffee district, and its seaport, *Santos*, are busy cities. It is interesting to note that the electric, gas, streetcar, and telephone services in these two cities are owned by a Canadian company. *Pernambuco* and *Sao Salvador* (Bahia), on the Atlantic coast, are prosperous centres through which passes a large part of the commerce of Brazil. *Manaos*, almost a thousand miles up the Amazon, and *Belem* (Para), at the mouth of the river, are important rubber ports.

Helps.—Compare Brazil in size and population with Canada. What is the commercial importance of the Amazon to Brazil? Of what use are the tropical forests? What is the use of the rivers? Why are there not more railways? Why is so much coffee grown? Why does Brazil export her iron ore? Why do so many Europeans emigrate to Brazil? Locate the cities on the map and account for the location of each.

ARGENTINA

The Argentine Republic extends from north of the Tropic of Capricorn to the extreme south of the continent. It is about one-third the size of Brazil and has about one-third as many inhabitants. The people are mainly of Spanish descent, but there are many Indians, French, Scots, Germans, and Italians. In fact, during recent years there has been such a large immigration from Italy that the Italians now make up one-sixth of the population. With so many immigrants pouring into the country, with so much foreign capital being invested there, and with so much fertile land awaiting development, it is to be expected that in the near future Argentina will become the most important of the South American republics. Its position, lying as it does almost wholly within the Temperate Zone, is favorable to the development of an energetic and progressive people.

Photo from Ewing Galloway, N.Y.

Grain Elevators at Buenos Aires

Argentina is one of the great wheat countries of the world.

Argentina is a great plain, sloping from the Andes to the basin of the Plata and its tributaries and towards the Atlantic Ocean. In the north-western section there are dense tropical forests. In the south are the dry and somewhat desolate plains of Patagonia, while lying between this section and the tropical forest are the pampas, or prairie lands. In the east the pampas are well watered, but towards the mountains the rainfall is less, so that the country is much drier and better suited to cattle-raising than to the growing of grain.

Since such a large part of the Argentine is grass-land, the raising of horses, cattle, and sheep is the chief industry of the people. No country, with the exception of Australia, raises so many sheep. But the grain-growers are beginning to displace the ranchers. More and more land is being fenced in, and a new era of comparatively small farms is in sight. At present the methods of farming are poor, but, in spite of this, immense quantities of wheat, corn, and flax-seed are produced and shipped, principally to the countries of Europe. Frozen mutton and beef are also sent to Europe, as well as meat extracts. Hides, tallow, butter, and dried beef are important articles of commerce. A considerable part of the world's supply of wool comes from Argentina. Cotton and sugar are grown in the tropical districts of the north.

The manufacturing industries are for the most part connected with grain-growing and cattle-raising. For instance, there are factories for the manufacture of flax-seed-oil in some of the interior cities. There is very little iron and coal to be found, so that it is doubtful if manufacturing will ever become a leading industry. Lumbering in the extensive forests of the northern and north-western parts is becoming of great importance. In the forests is found the quebracho tree, the wood of which is so hard and heavy that it will not float. Both the wood and the bark yield a valuable tanning material, much in demand among the leather manufacturers of Europe.

The rivers are of great aid to trade within the country. The Parana, which flows through the richest agricultural districts, is navigable for 1900 miles. The railways are largely concentrated in the central part of the country near Buenos Aires.

Buenos Aires, on the right bank of the estuary of the Plata, is the capital. It is the most important city of South America, with a population of about 2,310,000. It is the leading port in the Southern Hemisphere. The city is very handsome and is the centre of the business life of the country. The harbor, however, is poor, and requires constant dredging to keep it open. *Rosario,* situated on the Parana, is the second city of the Argentine. It is noted for its stockyards, and for its refrigerating plants, where the carcasses of sheep and cattle are frozen for export. *Bahia Blanca,* a growing city on the bay of that name, on the south coast of the estuary of the Plata, is the centre for railways from all parts of the country. On the border of the wheat and flax districts is the thriving city of *Cordoba.* Its situation on the Transandean Railway makes it an important commercial place.

Photo from Ewing Galloway, N. Y.

Scene on an Argentine River

Helps.—Compare the surface and climate of the Argentine with those of our Prairie Provinces. How does it compare with our Prairie Provinces as a grain-growing country? with Alberta as a ranching country? Compare the natural resources of the Argentine with those of Brazil. How do you account for the prosperity of the Argentine? Compare the products of the northern and southern sections. Show how the exports are related to the natural resources. Is the country well provided with railways? Of what commercial use are the rivers? Why is there not more manufacturing? Account for the location of each of the cities. Why is Buenos Aires such a large city? How is the Argentine connected with Brazil? with Chile? Write a brief description of the Transandean Railway.

THE LESSER COUNTRIES

Uruguay and Paraguay.—These two small countries lie between Brazil and the Argentine. The surface of Uruguay resembles that of the pampas of the Argentine, but is more rolling and is varied by wide stretches of wooded land. Cattle-raising and sheep-raising are the principal industries, although grain-growing is rapidly increasing, as well as the culture of tobacco, cotton, and grapes. The principal exports are wool, frozen beef, beef extracts, hides, tallow, and the horns of cattle.

Paraguay is divided into two parts, *Paraguay Proper* and the *Paraguay Chaco.* The Chaco, lying to the west of the Paraguay River, is inhabited only by Indians and wild beasts. Paraguay Proper has a surface resembling that of Uruguay and contains one or two low mountain ranges covered with dense forest. The products of Paraguay are similar to those of Uruguay, with the addition of oranges and maté. Lumbering is now the principal industry. The women of the country make beautiful lace.

Montevideo, the capital of Uruguay, is a very attractive city, built on a fine harbor on the estuary of the Plata. *Fray Bentos,* near the border of the Argentine, is the second city of Uruguay. The beef extract produced there is known all over the world. *Asuncion* is the capital of Paraguay. It is connected both by water and by rail with Buenos Aires.

Chile.—Chile, the third in importance of the countries of South America, lies on the west slope of the Andes. Because of the nearness of the mountains to the sea, it is very narrow, but it is about 2,500 miles in length. It includes many islands along the coast and a part of Tierra del Fuego.

Chile is one of the most progressive countries of South America. It has the honor of having built the first railway in the southern continent. The ruling class are chiefly of Spanish descent, but there is a very large native population.

Because of its length and the altitude of its mountains, the country has a wide range of climate and of products. The northern section is almost entirely a desert. In some places, however, agriculture may be carried on with the aid of irrigation. In this region are the valuable beds of nitrate of soda which are the chief source of revenue of the country. Most of the fertile area is in the central part of the country. In this central part there is a long valley between the Andes proper and a low mountain range near the coast. In it wheat and barley are raised for export, while tobacco, fruits, and vegetables are grown for home use. In the southern section there are many sheep and cattle ranches, with a large trade in wool, hides, and leather.

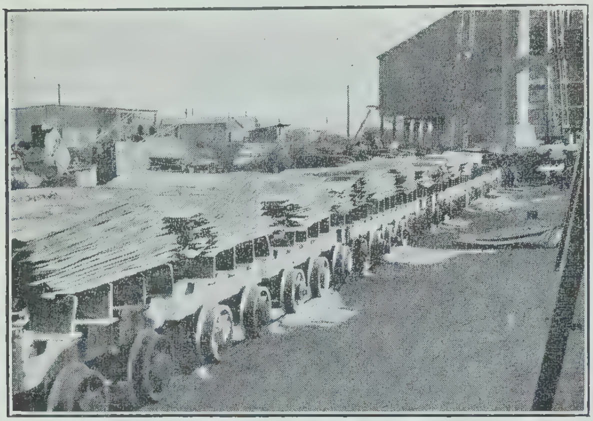


Photo from Ewing Galloway, N. Y.

Copper Mining in Chile

The sheets of copper are being carried from the smelting plant for shipment abroad.

Mining, however, is the chief industry. Copper and nitrate of soda are shipped in enormous quantities. In fact, so much nitrate is being exported, that there is grave danger of the deposits, vast as they are, being soon exhausted. The Chilean government places a heavy export duty on nitrate, with the result that the revenue received from this source very much lightens each year the taxes of the people. Borax and iodine are two of the leading exports. Gold, silver, and coal are other important minerals.

There is almost unlimited timber wealth, but so far it has been but little developed. Manufactures, too, are in their infancy. Of these, flour, cheese, and leather goods are the principal. On the islands off the coast, guano —bird-manure much used as a fertilizer—is dug up and exported both to Europe and to the United States.

Valparaiso, on the Pacific coast, is the chief city and is the seaport of *Santiago*, the capital, which lies in the interior agricultural valley. *Iquique* is the centre of the trade in nitrate of soda and guano. *Punta Arenas*, on the Strait of Magellan, is the chief town of that sparsely populated region and is a port of call for vessels. Sheep are raised in the vicinity.

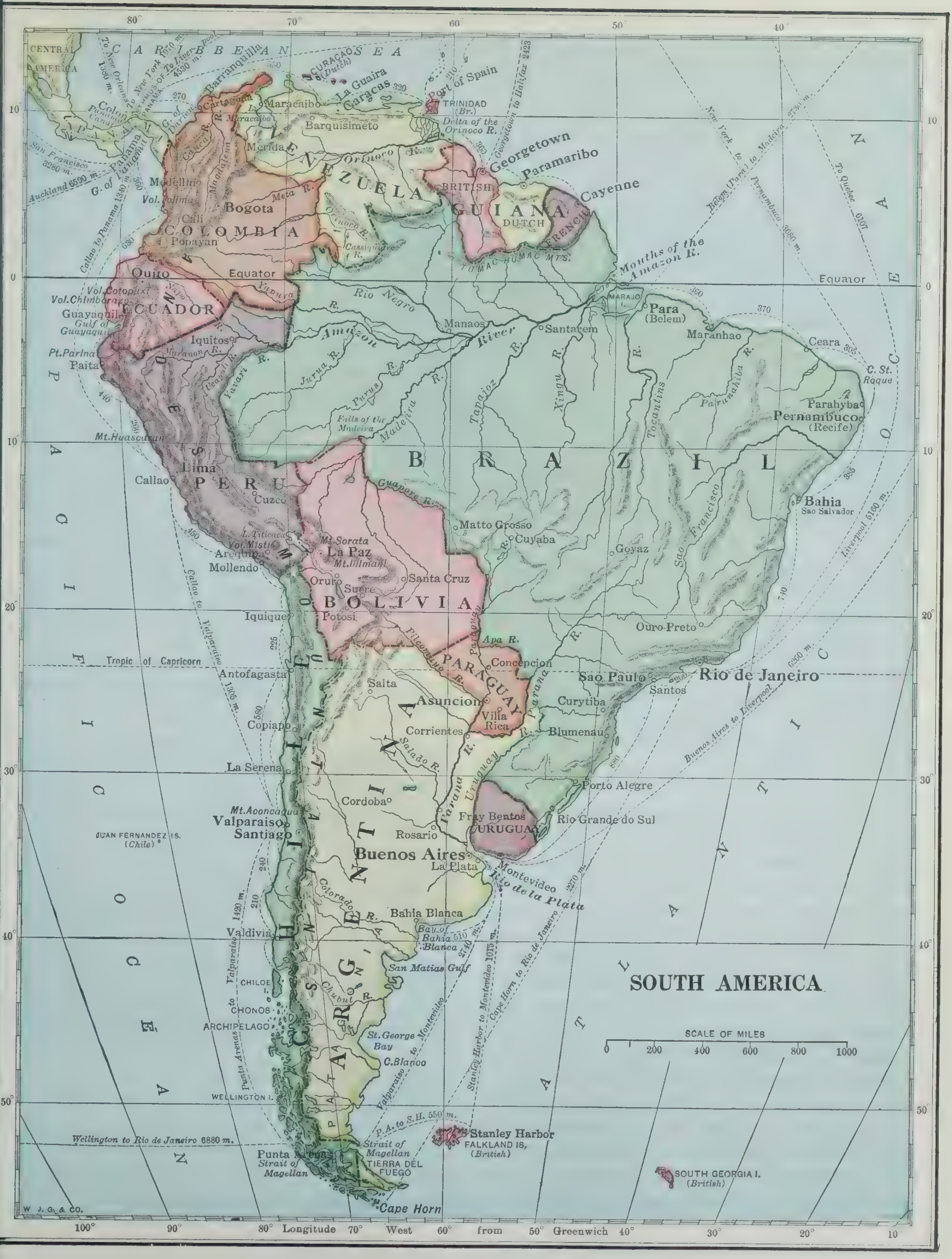
Peru.—The surface of Peru consists of a narrow strip of land along the sea-coast, of the mountainous region with many fertile tablelands and valleys, and of the eastern slope of the Andes, with a part of the basin of the upper Amazon. It lies entirely within the tropics, but the country is so mountainous that almost all varieties of climate are found. There is plenty of rain in the northern section and on the eastern side of the Andes, but Southern Peru is almost a desert, with a fall of rain only once in six or seven years.

In the valleys and tablelands among the mountains, the common grains and vegetables of the Temperate Zone are all grown. In the warmer districts, sugar-cane, cotton, tobacco, cacao, and coffee grow luxuriantly. The sugar industry is the most valuable in the country. Cattle and sheep are raised, the latter principally for their wool. Wool is also obtained from the large herds of alpacas and vicuñas. In this there is a large export trade. The forests furnish rubber, cinchona bark, and cacao beans. Peru, like Chile, has large mineral deposits, copper, petroleum, and guano being important products.

Photo from Ewing Galloway, N. Y.

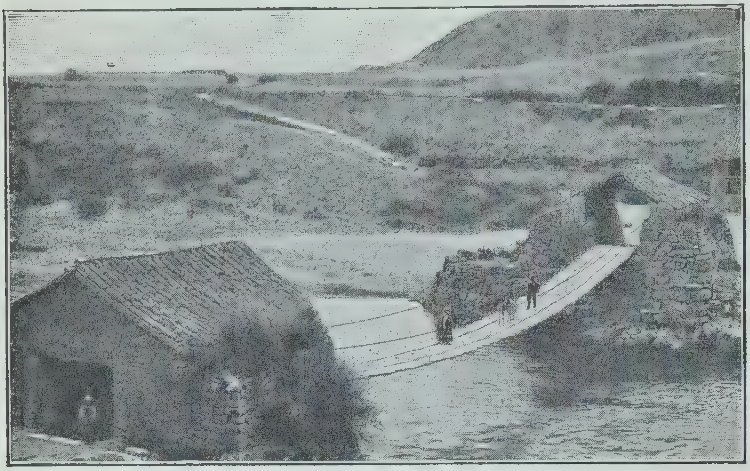
The Water Front, Callao, Peru

Callao has considerable trade with Vancouver.



SOUTH AMERICA

It was the rich mines of Peru that first attracted the Spaniards to that country. These mines are still being operated and are still yielding their wealth. In addition to copper and silver, gold and coal are mined.



A native Bridge in Peru

This crude bridge is similar to those built in the days of the Incas, or native rulers of the country.

The mines, however, are difficult of approach, and, until railways are constructed, much of the mineral wealth of Peru will remain undeveloped. The lack of railways is also a hindrance to manufacturing. The Peruvians are fully alive to the importance of railways. They have already constructed several lines which are marvels of engineering, and are now building others.

The oil fields of Peru are very extensive; in fact, oil is one of the leading exports of the country. The other important exports are sugar, cotton, wool, and copper.

At the western base of the Andes is *Lima*, the capital. *Callao*, its seaport, lies on the coast seven miles distant. Other important centres are *Arequipa* and *Cuzco*, both high up among the mountains.

Bolivia.—Bolivia is entirely an inland country. Except in the northern and eastern parts, which lie within the basin of the Amazon, the surface is mountainous, with deep valleys between the ranges. *Lake Titicaca*, on the boundary between Bolivia and Peru, is 140 miles long and is nearly two miles and a half above the level of the sea. Much of the country, covered with dense forest, is as yet unexplored. The climate, except when tempered by the altitude, is tropical.

The most important industry is mining. Next to the Malay Peninsula in Asia, Bolivia is the greatest tin-producing country in the world. Gold, silver, and copper are found in immense quantities, but transportation is so difficult, and the methods of mining are so crude, that comparatively little ore is taken from the mines. From many of the mines the ore is carried on the backs of llamas. But Bolivia is alive to the necessity for improved transportation. Three railways now reach the Pacific coast from the interior, and others are under construction. Both the Amazon and the Parana-Plata River systems touch Bolivia, so that there is communication by steamer with the Atlantic Ocean on the east, as well as by rail with the Pacific on the west.

The products of the farms in the valleys among the mountains are similar to those of Peru. Rubber is produced in the north and east, while the wool of the llama is a valuable article of export. There is but little manufacturing.

Photo from Ewing Galloway, N. Y.

Indians selling Crude Rubber

The largest city is *La Paz*. It is the actual seat of government, although *Sucre* is the capital. Other cities of importance are *Potosi* and *Santa Cruz*.

Ecuador.—Ecuador is a very mountainous country. Two active volcanoes—*Chimborazo* and *Cotopaxi*—are within its borders. Earthquakes are very common and sometimes do much damage. The climate in the lowlands is tropical. Among the mountains and along the base of the hills, where most of the people live, the climate is much more pleasant. There are but few railways and practically no roads. This lack of transportation has greatly hindered the progress of the country.

Ecuador is exceedingly rich in minerals, but very little mining is done, except in some of the richer gold fields. Cacao, coffee, and sugar-cane, as well as the cereals of the Temperate Zone, are cultivated. Cocoa is the staple product of the country. There is almost an entire absence of manufacturing, with the exception of Panama hats and cocoa.

Quito, the capital, is situated among the mountains, but it is connected by railway with *Guayaquil*, its seaport. Both are large and flourishing cities.

Colombia and Venezuela.—These two countries cover the northern portion of the Andes Mountains and most of the basin of the Orinoco. In the mountains, gold, silver, and copper are mined, but the industry awaits the coming of railways. Venezuela exports great quantities of asphalt. These countries are becoming large producers of oil. It is interesting to note that Canadian capital is playing a considerable part in the development of the oil fields of these countries. In the mountain valleys and on the coastal plain sugar-cane, tropical fruits, coffee, tobacco, and cacao are grown, while on the highland plateaus are cultivated the grains and vegetables of the Temperate Zone. On the llanos large numbers of cattle are raised.

Bogota, situated about 9,000 feet above sea-level in the midst of a rich agricultural country, is the capital of Colombia. *Barranquilla*, at the mouth of the *Magdalena River*, is the chief port of that country. The capital of Venezuela is *Caracas*, built on a high plateau about six miles from the sea. It is connected by railway with *La Guaira*, its seaport. *Valencia* lies in one of the inland valleys. It is connected by rail with the port of *Puerto Cabello*.

The Guianas.—The only parts of the mainland of South America now under the control of any European nation are the three Guianas—*British Guiana*, *Dutch Guiana*, and *French Guiana*—belonging respectively to Great Britain, the Netherlands, and France. The surface rises from the low coastal plain in a series of terraces to the grassy savannas of the interior. Behind the savannas are mountain ranges and the dense forests with which a large portion of the country is covered. The forests are filled with tropical birds and animals, are inhabited by Indians, and are almost entirely unexplored.

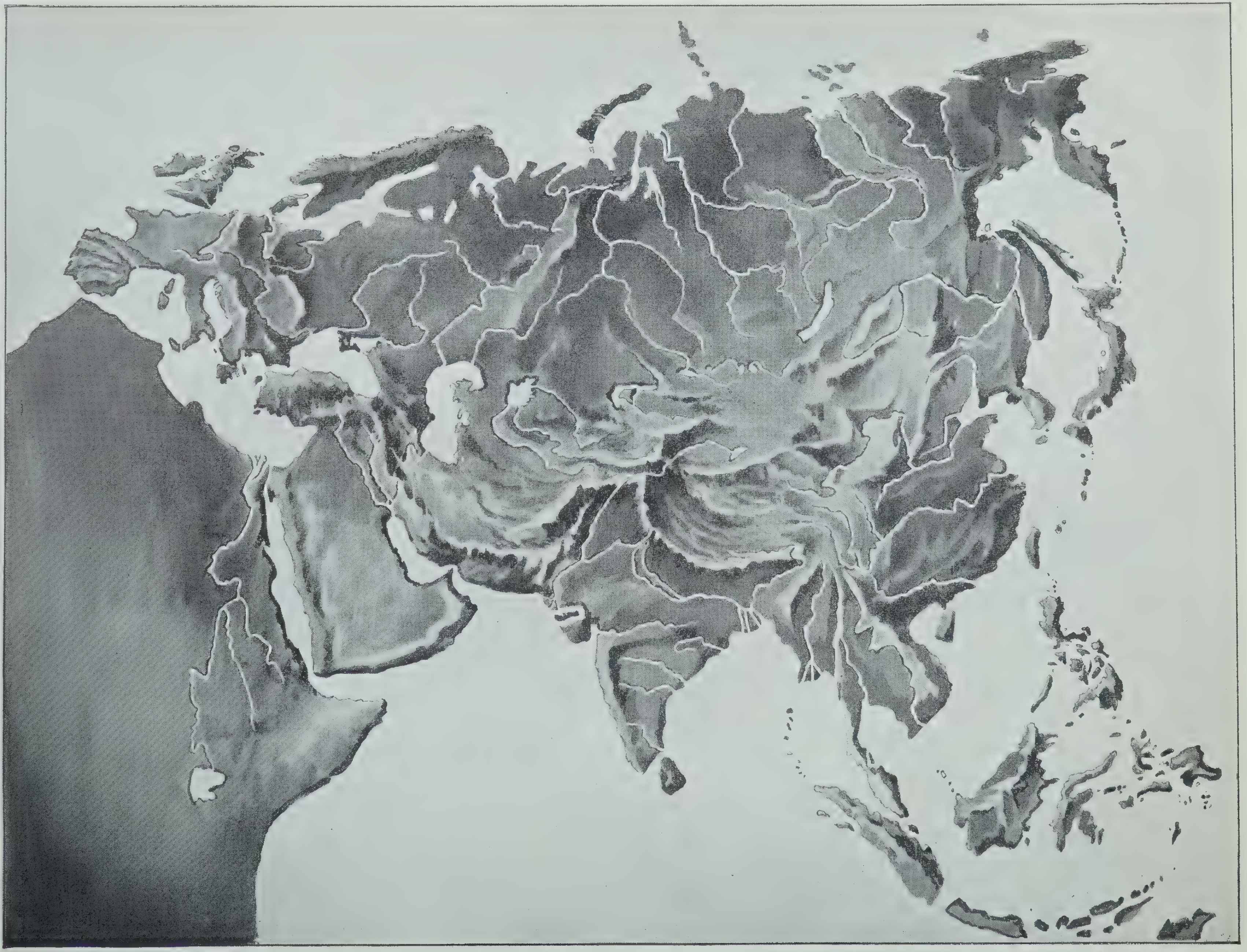
The longest river is the *Essequibo*, which enters the sea after a course of 600 miles. The principal products are sugar-cane, cotton, tropical fruits, rice, and gold. There are very few roads and only one short railway. French Guiana, or, as it is sometimes called, *Cayenne*, is used as a penal settlement by the French government.

Photo from Ewing Galloway, N. Y.

Mule Train arriving at a Coffee Warehouse in Colombia

Georgetown is the capital of British Guiana, *Paramaribo* of Dutch Guiana, and *Cayenne* of French Guiana.

The South American Islands.—The archipelago of *Tierra del Fuego* lies at the extreme south of the continent. It belongs part of it to Chile and part of it to the Argentine. There is much forest-land and some grassland, but the few thousand inhabitants have by no means an easy life. West of Chile lies the island of *Juan Fernandez*, where Alexander Selkirk is supposed to have been wrecked. It was his adventures that sug-



PHYSICAL MAP OF EURASIA

gested to Daniel Defoe the character of Robinson Crusoe. The island belongs to Chile. It is of little commercial importance. There are hundreds of other small islands off the coast of Chile and Peru, many of which, as already mentioned, contain large guano deposits.

The *Colon Archipelago*, formerly known as the *Galapagos Islands*, about 700 miles west of the Ecuador coast, belongs to that country. The name Colon was given to the archipelago in honor of Columbus. These islands, thirteen in number, are of volcanic origin. They are frequented by giant turtles.

Helps.—Locate on the map the lesser countries of South America. Trace carefully the boundaries of each. Locate each in its relation to the great physical divisions of the continent. Compare their surfaces. Which of these countries are entirely inland? How are the disadvantages connected with this situation overcome? How are these countries provided with railways? What are the difficulties connected with railway-building in Peru and Bolivia? Compare in this respect with Paraguay and Uruguay. What effect has the surface of each country on its products? What are the chief products of each? To what extent is irrigation used?

Find out all you can about mining in the Andes. What use is made of water-power? Describe Lake Titicaca. How do the occupations of the people in Venezuela and Colombia compare with those of the people of Mexico? Which of these countries have oil? What is the importance of these oil fields? Colombia has coal, and Venezuela has iron; will these countries become great manufacturing centres? What are the chief products of the forests of these countries? Of what value is the coast-line of the countries bordering on the Pacific? Of what value are the Guianas to the parent countries? Locate the chief cities and account for their location. What is the commercial value of each of the South American islands?

THE LAND MASS OF EURASIA

Size and Position.—The greatest land mass in the world is Eurasia, which has an area exceeding 20,000,000 square miles. The northern coast lies well within the Arctic Circle; the most southerly extremity reaches within a short distance of the equator. To the west, the coast of *Ireland* is in 10° west longitude; far to the east the islands of *Japan* are approximately in 140° east longitude, while the northern coast of *Asia* extends some 45° even farther to the east.

This vast land mass comprises two continents—*Europe* and Asia. Since, however, Europe is structurally merely a large peninsula extending westward from Asia, it is convenient to regard the whole land mass of Eurasia as a unit so far as structure is concerned.

General Structure.—A glance at the relief map of Eurasia shows certain important points in which its structure differs from that of North or South America. Close to the west coast of the two Americas runs an unbroken chain of mountain ranges in a general north and south direction. Through Eurasia also runs a great series of mountain ranges, but these are close to the southern coast, are not nearly so continuous as the Rockies and the Andes, and run east and west instead of north and south. Therefore, the southern portion of Eurasia forms the chief highland area, while to the north lies an immense plain, extending almost from the Atlantic Ocean to the Pacific Ocean and sloping gently northward to the Arctic Ocean.

The Main Axis.—The main axis of Eurasia extends right through from the Atlantic Ocean to *Bering Sea*. The *Pyrenees Mountains* are the most westerly link in the chain. Then come the *Alps*, the most famous mountains of Europe. The *Balkan Mountains* continue the line eastward to the *Black Sea*. East of the Black Sea, and forming part of the dividing line between Europe and Asia, are the *Caucasus Mountains*. Extending south and east from the Caucasus range is a high and mountainous plateau, called the *Plateau of Iran*. East of this plateau is one higher still—the *Pamirs*, an area of rolling hills and gravelly plains more than two miles above the level of the sea. On account of its great altitude this region is known as "the roof of the world." From the Pamirs two great ranges radiate. One, the lofty *Himalaya Moun-*

tains, strikes south-east into *Indo-China* and *Siam*. The other, the *Thian Shan Mountains*, branches out from the Pamirs to the north-east, and continues in a series of mountains and plateaus right to the shores of Bering Sea.

Included in this great mountain system are several important mountain ranges or plateaus extending southward from the main axis. Such are the *Iberian Plateau*, which comprises the countries of *Spain* and *Portugal;* the islands of *Corsica* and *Sardinia*, which are the highest parts of a partially submerged spur of the Alps; the *Appenine Mountains*, which form the back-bone of the *Italian Peninsula*; and the *Balkan Peninsula*. These are the chief southward extensions of the main axis of Europe. The great Asiatic peninsulas jutting southward—*Arabia, India,* and Indo-China—are also due to southerly spurs from the main Eurasian axis.

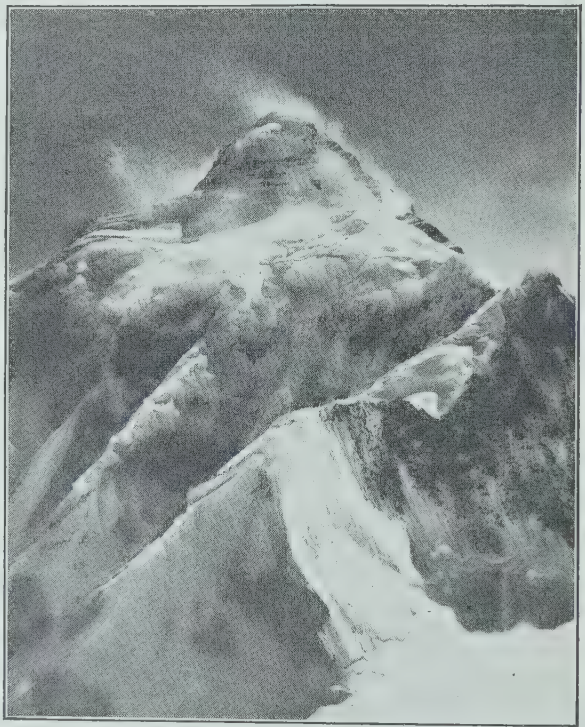


Photo from Ewing Galloway, N.Y.

A Mountain-Peak in the Himalayas
This mountain-peak is 28,250 feet in height.

Northern Highland Areas.—North of the main axis in Europe are two important highland areas—the *Scandinavian Plateau* and the *Ural Mountains*. The Scandinavian Plateau is formed by a range of mountains which parallels the west coast of *Norway*, dips under the *North Sea*, and reappears again in the north of *Scotland*, North-western *England*, and *Wales*. Long ago, it was all covered with ice, which moved slowly down the valleys in huge glaciers. Districts over which glaciers have moved are said to be glaciated, and in them are often found many small lakes lying in the hollows formed by the ice many, many centuries ago.

The Ural Mountains form part of the dividing line between Europe and Asia. They are low, for the most part, and offer no beautiful scenery such as abounds in the Scandinavian Plateau. They are, however, extremely rich in minerals, especially in iron, gold, silver, platinum, and coal.

The Great Lowland Plain.—The whole of Eurasia north of the main axis is, with the exception of the two northern highlands, a vast lowland plain. The northern margin of the plain bordering upon the Arctic Ocean is a dreary land, with typical tundra vegetation—moss, coarse grass, and lichens. The ground never thaws for more than two or three feet below the surface. The few inhabitants of the tundra rely upon fish and animals for their food. They have one domesticated animal, the reindeer. This animal is their mainstay, for it draws sledges and provides them with milk.

South of the tundra belt are forests of pine, fir, tamarack, and birch, which extend in an unbroken belt right from the Atlantic Ocean to the Pacific. These northern forests shelter many fur-bearing animals. Their skins are the chief source of wealth for the hunters who make their home in the gloomy depths of the forest. On the southern border of this forest, where the trees are large, much timber has been cut, and large areas have been cleared for cultivation, particularly in Europe.

To the south of the northern forest in Western Europe there was once a broad belt of *deciduous* trees, that is, trees which shed their leaves annually. Most of this forest has been cut down, and the ground which it covered is now a belt of fertile farms, on which crops of barley, rye, oats, and wheat are grown. The common trees of this region are the familiar oak, ash, elm, beech, birch, and poplar. The shores of the North Sea and the *Baltic* lack these deciduous trees. The dry, sandy plains found there are not suitable for them, and forests of pine and fir and wide heaths take their place.

Farther to the east and towards the south is a vast area in which the rainfall is sufficient for grass, but too little for trees. This part of the plain, which corresponds to our own western prairies, is called the *steppe*. Much of the steppe in Europe is good agricultural ground and is farmed, but in Asia the steppe is inhabited by nomads, who wander in search of good pasture for their herds of camels, cattle, and horses, and for their flocks of sheep and goats.

That part of Asia which lies between the *Caspian Sea* and the mountains of the Pamirs and the Thian Shan range, as well as a comparatively small area in Europe around the Caspian Sea, forms a basin, or depression, much of which lies below the level of the ocean. The streams which rise in the mountains to the south and east of the basin flow into the lowest parts of it. Consequently, there are many small salt lakes in this district, and two very large ones, in addition to the Caspian Sea.

Helps.—Compare Eurasia in size with North America and with South America. Note carefully the location of Eurasia on the globe. In what relation physically does Europe stand to Asia? Into what great physical divisions is Eurasia divided? What are the leading characteristics of each? Locate on the map the highlands and the plains of Eurasia. In what relation do the plains stand to the highlands? Name the chief mountain ranges. Compare the physical divisions of Eurasia with those of North America. What are the chief characteristics of the Great Lowland Plain? Compare it with the Great Central Plain of the Dominion of Canada.

THE CONTINENT OF EUROPE

THE CONTINENT AS A WHOLE

Map Questions.—What ocean is north of Europe? What ocean separates Europe from North America? What sea separates Europe from Africa? from Asia Minor? What inland sea is partly in Europe and partly in Asia? What sea lies between *Germany* and *Sweden?* Name the countries which have a coast-line on this sea. What countries are separated by the *Gulf of Bothnia?* by the *Gulf of Finland?* What peninsula separates the *Baltic Sea* from the Atlantic Ocean? What countries does this peninsula contain? What sea separates *Great Britain* from the *Scandinavian Peninsula?* Name the countries having a coast-line on this sea. What peninsula separates the *North Sea* from the Baltic?

What channel is south of Great Britain? What countries does it separate? Name the strait connecting it with the North Sea. What peninsula is formed by the *Bay of Biscay*, the *Atlantic Ocean*, and the *Mediterranean Sea?* Name the countries of this peninsula. What two countries are partly separated by the Bay of Biscay? What bodies of water are joined by the *Strait of Gibraltar?* Find two large peninsulas jutting south into the Mediterranean Sea. Name them. What sea is east of the *Italian Peninsula?* of the *Balkan Peninsula?*

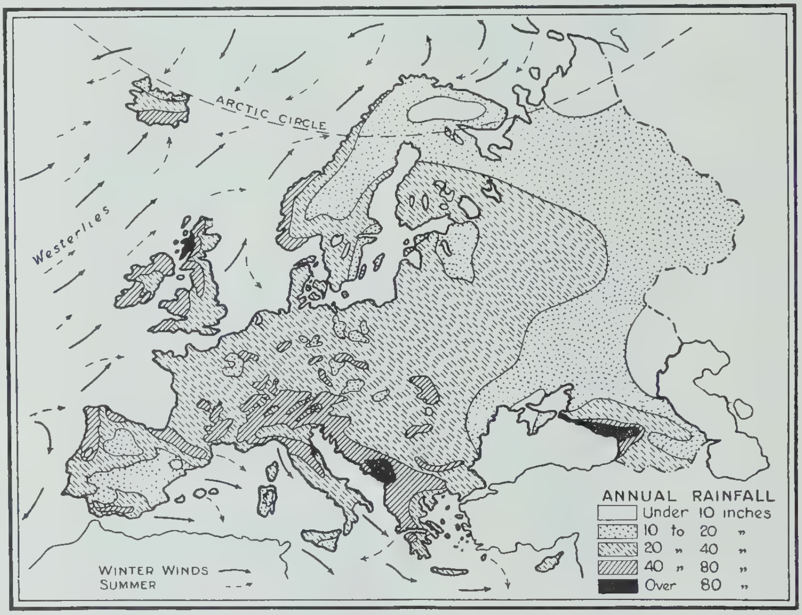
Name the countries which have a coast-line upon the Mediterranean Sea. Find a group of islands in the Mediterranean south of *Spain*. Name two large islands lying west of *Italy* and one south of it. What large island is south-east of *Greece?*

Name the strait connecting the *Sea of Marmora* with the *Aegean*. What strait connects the Sea of Marmora with the *Black Sea?* What large peninsula projects into the Black Sea? What sea does it partly enclose? Name the countries of Europe which have a coast upon the Black Sea. What countries of Europe have no sea-coast at all?

How many highland areas are there in Europe? Where is the largest of these? What mountain ranges partly separate Europe from Asia? What mountains form the *Scandinavian Highland?* Find the *Great Plain of Europe*. Are there any mountains to prevent the west winds from the Atlantic from reaching it? In what zones is Europe? In what zone is by the far greater part of the continent? What, then, are the main crops grown by the farmers of Europe?

The Importance of Europe.—Europe has long been the home of the most highly civilized races in the world. Her peoples have long been foremost in industry, commerce, science, and art. From her shores went the great sailors and adventurers who opened up whole new continents for settlement. New Zealand, Australia, South America, North America, and South Africa are largely peopled to-day by men of European birth or descent. The civilization of these new lands is and will be the civilization of Europe adjusted to new conditions. From this point of view, Europe is the mother-continent of half the world.

Yet this continent, the centre of our modern world, is comparatively small. It is only about one-fifth the size of the huge continent of Asia, and only one-third as large as Africa. It is not quite half the size of our own continent of North America. Small as it is, however, it has a greater volume of trade, greater wealth, and more influence in the world than Asia, Africa, South America, and Australia combined. Why is this?



Rainfall and Wind Map of Europe

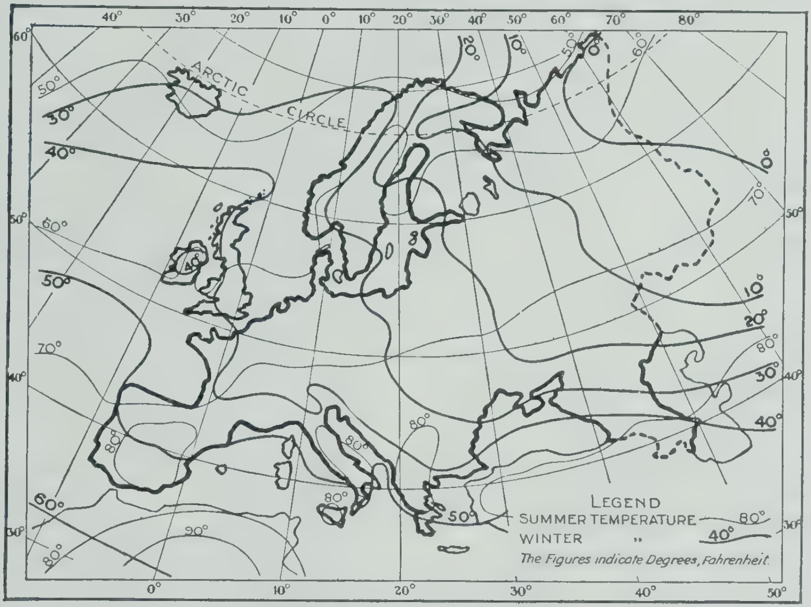
First of all, Europe is the home of the white peoples of the world. The white races have proved themselves superior to all others in many ways. They are more eager to acquire knowledge and to put it to practical use. They are more energetic. They have a greater capacity for organization, which is one of the chief characteristics of civilized man.

The globe shows how Europe is situated with respect to the other continents. Asia lies to the east, Africa to the south. Europe is in fairly close touch with both. The products of Asia and Africa are easily brought to Europe by sea; from Asia by way of the *Suez Canal* and the *Mediterranean*, from Africa up the Atlantic sea-board or across the Mediterranean. Across the Atlantic are the two Americas. Thus Europe is favorably situated for trading with both the Old and the New World. This is one reason for her enormous commerce.

The coast-line of Europe is extremely irregular. Everywhere along the west and the south the sea cuts deep into the land. In fact, the coast-line of Europe is so irregular and the arms of the sea extend so far inland that no part of the continent, except Eastern *Russia*, is more than four hundred miles from the sea. This is a second reason for the early and extensive development of its maritime commerce.

Europe is the most densely populated of all the continents. Over half as many people live in Europe as in Asia, although Asia is nearly five times as large. The population of Europe is fifty times that of Canada, although Canada and Europe are nearly equal in area. One reason why so small a continent can support so great a population is that Europe is particularly favored in climate, so that agriculture is possible even in the far north of the continent. Another reason is that Europe manufactures a great many things in vast quantities and exchanges these for food-stuffs brought from other lands.

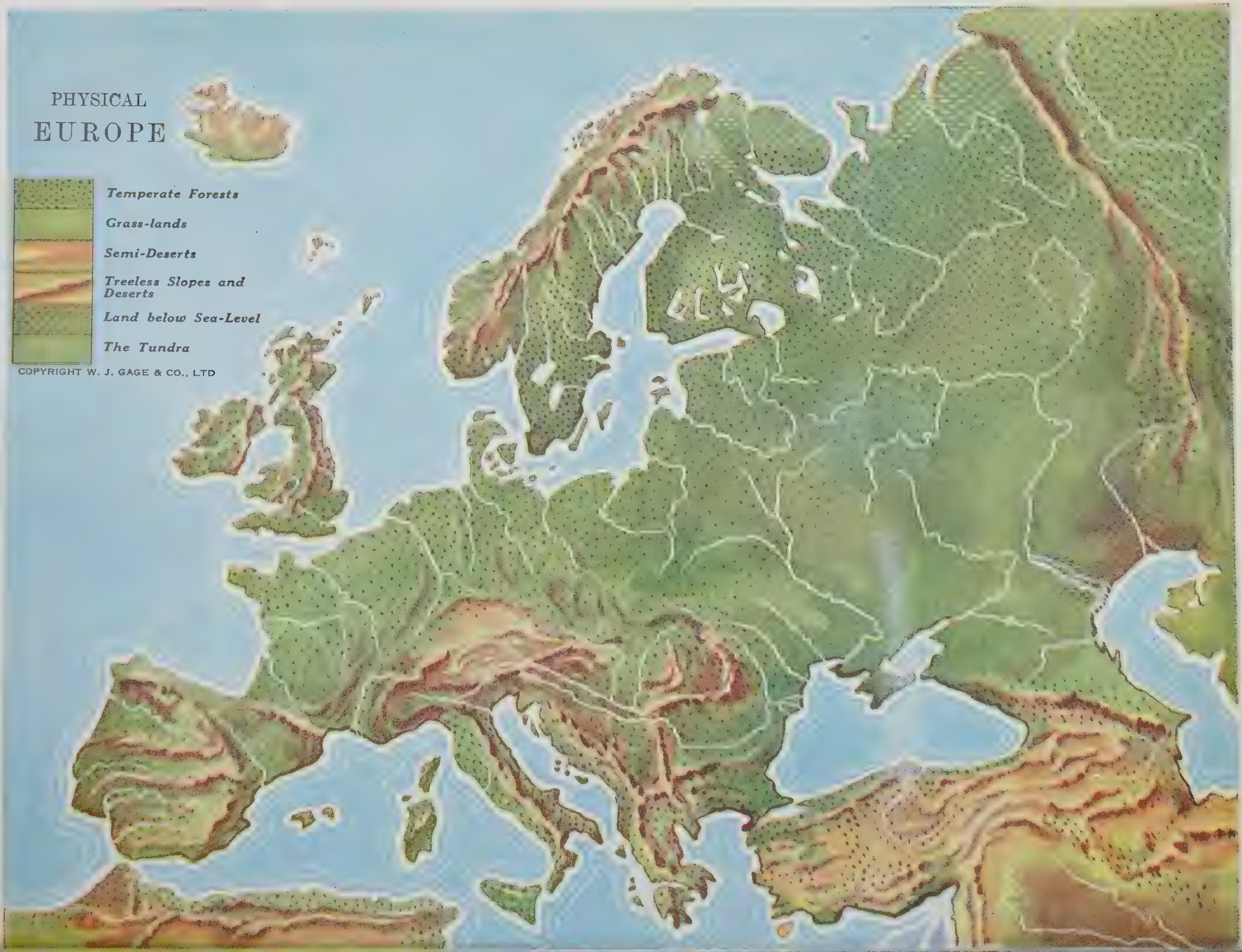
Coast-Line.—The coast-line of Europe is very irregular and is considerably longer than that of any other continent. Everywhere along the west and south the sea cuts deep into the land and forms many excellent harbors. The long arms reaching far inland from a number of the seas enable ships to carry goods directly to most of the countries of Europe and thus increase their commerce tremendously. In the north is the *Baltic Sea,* with its two long arms, the *Gulf of Bothnia* and the *Gulf of Finland,* through which Atlantic vessels can sail into the harbors of *Sweden, Finland, Denmark,* Russia, and many of the smaller countries of Europe. Through the *North Sea,* lying between *Great Britain* and *Scandinavia,* passes much of the trade of some of the greatest commercial countries of the world — Great Britain, *Belgium, Holland,* Denmark, and *Germany.* The *Irish Sea,* between Great Britain and *Ireland,* has on its shores many of the busiest ports of the *British Isles.* The long, narrow stretch of the *English Channel* makes communication between *England* and *France* a matter of but a few hours. Farther south is the great *Bay of Biscay,* jutting far into the land. Its waters wash the northern coast of the *Iberian Peninsula.*


ARCTIC CIRCLE
LEGEND
SUMMER TEMPERATURE —— 80°
WINTER " —— 40°
The Figures indicate Degrees, Fahrenheit.

Temperature Map of Europe

On the south Europe's coast-line is just as irregular. The long *Italian Peninsula* stretching far down into the Mediterranean almost cuts off the *Adriatic Sea.* The Mediterranean, touching, as it does, the shores of most of the countries of Southern Europe, affords a water-route through the *Strait of Gibraltar* to the countries north, west, and south, and through the Suez Canal to the countries of the Far East. Farther east the *Aegean Sea* lies between the peninsula of *Greece* and Asia Minor and is connected with the *Black Sea* through the *Dardanelles,* the *Sea of Marmora,* and the *Bosporus.* The main features of the Black Sea are the *Crimean Peninsula* and the *Sea of Azov.* By means of the Black Sea the products of Russia, *Rumania,* and *Bulgaria* are carried to other countries. Moreover, many of the exports of the inland countries of *Austria* and *Hungary* are shipped down the *Danube,* and thence through the Black Sea to distant parts of the world. The *Caspian Sea,* which lies still farther to the east, is entirely surrounded by land, and the water there is slowly evaporating. The *White Sea,* to the far north of Russia, is of very little use for purposes of communication, as it is frozen over during almost half of the year.

The Scandinavian Highland.— Europe contains three highland areas —one in the north-west, one in the south, and one in the north-east. The first, the *Scandinavian Highland,* is formed by a range of mountains which, as has been said, parallels the west coast of *Norway,* dips under the North Sea, and re-appears in Great Britain as the *Scottish* and *Welsh Highlands* and the *Pennine Range.* It is also seen again in various parts of Ireland and in Western France. The surface in the more northerly region is rolling, and in some places great snow fields and glaciers are still to be found. On the west coast are long deep fiords and numerous islands. The seas in this area are all shallow, and there is every reason to think that Europe at one time extended farther to the west than at present. At that time Great Britain was



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united with the continent by land, and probably the North Sea was a wide plain. In later ages the land gradually sank, and the sea swept over it, making an island of Great Britain.

What may seem a loss to the continent, however, was really a gain, for the shallow sea between Britain and Norway is one of the greatest fishing grounds in the world and furnishes one of the chief sources of food for the whole continent. This is not the only benefit derived from the change. The long extensions of the sea into the land help to make the climate of Europe mild and equable, and have done much to increase the trade of Northern Europe. It is probable, too, that there was once a land connection between Europe and North America. Stretching from Norway to *Greenland* is an undersea ridge on which stand the *Faroe Islands* and *Iceland*, both of which are regarded as part of the continent of Europe.

The Southern Highland.—The highest and most important mountains of Europe are in the south. One central series of mountain chains extends right from the Bay of Biscay to the Black Sea. Trace it on your map, beginning with the *Pyrenees* and ending with the *Balkans*. The central part of the series is formed by the mighty *Alps*, the most famous mountains in the world. The great glaciers and beautiful lakes of the Alps attract many thousands of tourists annually. All Europe south of these ranges is mountainous, with the exception of narrow strips along the coast and in the valleys of some of the larger rivers, such as the *Rhone* in France and the *Po* in *Italy*. This is the reason why Southern Europe is divided into so many countries whose people speak so many different languages. The Pyrenees separate *Spain* from France. The Alps cut off the approach to Italy from the north. The Balkans form a barrier between the small countries of the *Balkan Peninsula* and Central Europe, and in Southern Russia the *Caucasus Mountains* form the boundary line between Europe and Asia.

The Plain of Hungary.—North of the central chain lies a semicircle of high ground, formed by the *Carpathian Mountains* and many lesser ranges. Enclosed by this semicircle and the Alps is a large basin, forming a plain of extremely fertile land, where large crops of wheat and corn are raised. This is called the *Plain of Hungary*. This plain is watered by the Danube, one of the most important rivers of the continent. It rises in the *Black Forest*, a mountain range in Southern Germany. It flows towards the east over a high plateau, and then enters the Plain of Hungary through a gap between the Alps and the *Bohemian Plateau*. After meandering through the Plain, it breaks through the Balkan Mountains by a long gorge, known as the *Iron Gate*, and then flows slowly to the Black Sea. There, also, it runs through a rich and populous country and is a great highway of trade. Navigation has been kept open to ocean vessels for 125 miles up the river to the port of *Braila* by the cutting of a channel through the swampy delta of the Danube.

Photo from Ewing Galloway, N. Y.

Ploughing on the Hungarian Plain

The Hungarian plain resembles very much the prairies of Western Canada.

The Great Lowland Plain.—The rest of Europe, with the exception of the region about the *Ural Mountains*, which form the eastern boundary of the continent, is a great plain, extending north of the southern highlands from the Bay of Biscay on the west and the Black Sea upon the east right to the Arctic Ocean. The only elevation of any size in all this great extent of land is the *Valdai Plateau*, situated a little to the south-east of the Gulf of Finland. The elevation of the land even there is only about 1,000 feet, but it is of importance, because several of the great rivers of Europe rise there.

The great lowland plain of Europe is well drained by many large rivers. The *Volga* flows for 2,000 miles through a vast area of Eastern Europe. It forms a great highway through a part of the continent poorly supplied with railways, and makes possible a free exchange of products from the Caspian Sea to Central Russia. The *Dnieper* and the *Don* are large rivers which, like the Volga, rise in the Valdai Plateau and flow southward through the European plain. The Dnieper empties into the Black Sea; the Don, into the Sea of Azov. Like the Volga, they, too, are important highways of commerce.

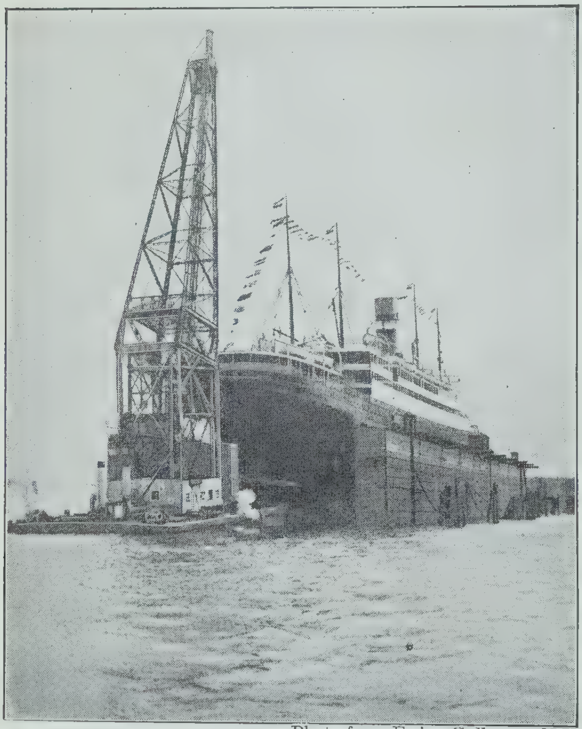


Photo from Ewing Galloway, N.Y.

The Harbor of Rotterdam, Holland

The trade of Rotterdam is chiefly with the Dutch colonies, but it has a large European trade as well.

Even more important are the rivers which rise in the southern highlands and flow northward or westward through the plain. Chief among these are the *Vistula* and the *Oder*, emptying into the Baltic; the *Elbe* and the *Rhine*, flowing into the North Sea; the *Seine*, which reaches the English Channel; and the *Loire*, which discharges its waters into the Bay of Biscay. The lands through which they flow—*Poland*, Germany, Holland, and France—are all densely populated, and consequently these rivers carry a huge traffic.

The Rhine is the most important commercial river of Europe and also the most picturesque. It rises in *Switzerland*, whence it flows in a northerly direction across Germany and Holland and empties into the North Sea at the port of *Rotterdam*. In its earlier course it forms part of the boundary between Switzerland and Austria and later for some distance forms the boundary between France and Germany. On either side of the river at first rise vine-clad hills and wooded, craggy mountains with here and there a quaint town with its ruins of ancient castles. Farther north it runs through a busy manufacturing and coal-mining district.

The Rhone also rises in Switzerland, and after flowing for 500 miles through Switzerland and France, it empties into the Mediterranean at *Marseille*. It is the chief commercial highway of France and is connected by canals with the Loire, the Seine, and the Rhine. Both the Rhine and the Rhone are rushing torrents during their course through Switzerland and in those parts are useless for navigation.

Climate.—Central and Northern Europe are exposed at all seasons to the effect of the steady west winds. These winds have a clear course into the heart of the continent, since the great mountain ranges run east and west and do not check them. The Scandinavian Highland is not high enough to rob them of all their moisture. The west winds bring rain at all seasons and permit the cultivation of splendid crops of cereals. In summer the winds from the ocean are cooler than the land and moderate the heat. In winter they are warmer than the land and lessen the cold. Their effect, of course, is greatest upon the western coastal regions, which have a much more equable climate than places in the far interior in the same latitude. Even in Eastern Europe, however, there are not such great extremes of temperature as in Central Asia.

In Eastern Europe the rainfall is less than along the west coast, for the rain-bearing west winds have a long distance to travel before reaching it and lose much of their moisture in their course. Therefore, towards the east the forest-land soon passes into grass-land, or *steppe*. Most of the steppe is good agricultural ground, but that section of it lying about the north shore of the Caspian Sea is almost a desert. Coarse herbs and scattered bushes grow in many parts of this region, but much of it is quite bare. It is dotted with salty marshes, of which many are covered with reeds.

Southern Europe, bordering the Mediterranean, has a very different climate. In the summer-time it lies within the trade-wind belt, and, therefore, is practically rainless during that season. In the winter-time, when the influence of the west winds extends farther south, it fares better, but then the moist winds bring heavy rains. The wall of mountains on the north shelters Southern Europe from the cold north-east winds. Therefore, it is a land of hot, rainless summers and mild, wet winters.

The vegetation of this region corresponds to the climate. It consists mainly of long-rooted plants, which can endure the severe summer drought. The trees and shrubs are evergreen, and most of them have dark, glossy foliage. Among these may be mentioned the cypress, the holly, the myrtle, and the laurel. The grape-vine and the olive flourish, and fruits, such as oranges, lemons, and figs, grow well. Wheat, which needs little rain and much sunshine, is the main cereal grown. Two of the most useful trees are the cork-oak, the bark of which is used to make cork, and the chestnut, the nuts of which are used for food.

Laplanders and their Reindeer
The reindeer provide both milk and meat for the Laplanders.

Photo from Ewing Galloway, N.Y.
A Vineyard in Czechoslovakia
The grapes are grown on a regular series of terraces from the roadside to the hill-top. Note the shrine.

People.—The peoples of Europe may be classified into three great divisions. First of all comes the *Latin group*, which, roughly speaking, lives in that part of the continent lying to the south of a line drawn from the Adriatic Sea to the English Channel. This corner of the continent includes France, *Portugal*, Spain, and Italy. The languages of the Latin peoples are much alike, for they are all derived from Latin—the language spoken by the Romans of long ago. Their laws and customs, too, are much the same. The *Rumanians*, although living far to the east around the lower Danube, also speak a language derived from Latin.

The British Isles, the Scandinavian Peninsula, and a block of country upon the mainland extending eastward from the Rhine to the frontiers of Poland, *Czechoslovakia*, and Hungary, and northward from the Italian frontier to the Baltic, form a separate division. It is made up of the countries of Great Britain, Norway, Sweden, Denmark, Holland, Germany, and Western Austria. The languages of all these countries are very similar, and the peoples, too, have much in common. These nations form the *Teutonic group*.

The rest of Europe, stretching eastward from the Baltic to Asia, and northward from the Carpathians, the Black Sea, and the Caspian Sea to the Arctic, is the homeland of the *Slavs*. The greater part of the Balkan Peninsula is also inhabited by Slavs. The Slav languages are all very much alike in their main characteristics, and the people are much the same in appearance and customs. The Slav nations include Russia, Poland, Czechoslovakia, *Yugoslavia*, and Bulgaria. They are, generally speaking, less advanced in civilization than the Latin and Teutonic peoples of the western and south-western sea-board.

Besides these three great divisions of people there are several smaller groups. The Scottish Highlands, *Wales*, and the south and west of Ireland, as well as *Brittany* in France, are peopled by *Celts*. Greek is spoken in the peninsula of Greece and the islands of the Aegean. In addition, here and there are places in which Asiatic peoples have succeeded in establishing themselves in Europe. These include the *Turks*, along the coast of the Dardanelles, the Sea of Marmora, and the Bosporus; the *Magyars*, who dwell in the plain of Hungary; the *Finns*, who live around the north-eastern shore of the Baltic; and the *Lapps*, who live in the northern part of the continent, in Norway, Sweden, and Russia. There are also tribes of Asiatic origin living in the tundra and in the depression around the Caspian Sea. All these peoples of Asiatic origin together form only a small percentage of the total population of Europe.

Helps.—Locate Europe on the map. Compare it in size with North America and with South America. Trace the coast-line. Compare the northern with the southern coast. Account for the peninsulas on the south. Trace the Mediterranean coast on both sides of the sea. What effect has the Mediterranean on the climate of Europe? Into what physical divisions is Europe naturally divided? Compare these physical divisions as to area. Describe each fully. What are the natural resources of each? Locate the great drainage basins. Compare the drainage basins with those of North America. Name the large rivers that drain each. Describe the Rhine, the Rhone, the Danube, and the Volga. What is the commercial importance of each? Compare the climate in the various physical divisions. What countries fall within each? What races are represented in Europe?

THE COUNTRIES OF EUROPE

THE BRITISH ISLES

The British Isles include the two large islands of *Great Britain* and *Ireland*, together with about 5,000 adjoining islands. They lie to the east of the continent, from which they are separated by the English Channel, the *Strait of Dover*, and the North Sea. As they are a part of the *British Empire*, they are treated elsewhere. *See page 224.*

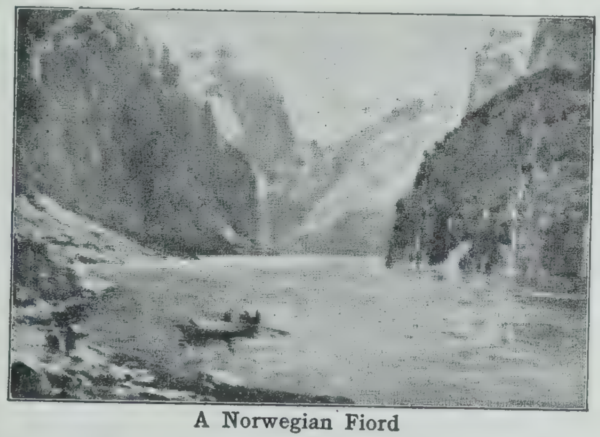
NORWAY

The kingdom of Norway occupies the western and north-western parts of the Scandinavian Peninsula. From north to south it extends for over a thousand miles, varying in width from twenty to two hundred miles. Its area is about half as great as that of Alberta. Its population is small when compared with that of some of the neighboring countries, as it has but 2,600,000 people. The inhabitants are intelligent and industrious. Their life on the sea and in the mountains has made them strong, vigorous, and independent. In the northern part there are about 20,000 Lapps.

With the exception of Spain and Switzerland, Norway is the most mountainous country in Europe. The surface slopes from the central mountain range of the peninsula towards the sea and is crossed by many deep, narrow valleys. In the southern part there is a broad plateau, which extends into

Sweden. The plateau is dotted with numerous lakes, which are connected with one another and are useful for inland transportation. The mountain-slope to the sea is short and steep, so that, while there are many rivers, they are useless for navigation. In their course, however, they form falls, which supply valuable water-power. Among the mountains are huge glaciers from which the rivers are fed. One of these glaciers, 300 square miles in area, is the largest in Europe.

The coast-line is very irregular, and all along the coast there are hundreds of small islands. Running far into the land are innumerable inlets, known as *fiords*. These fiords, with their calm waters and precipitous cliffs, either rocky or forest-clad, are perhaps the most striking physical feature of the country.



A Norwegian Fiord

Although Norway lies in the northern part of the North Temperate Zone, the climate is not nearly so cold as might be expected. So much of the country lies along the Atlantic Ocean and the fiords penetrate so deeply into the interior that the climate is affected by the comparatively warm sea-water. The steady west winds blow over Norway and bring an abundance of moisture. On the higher elevations in the interior the winters are very severe.

Only about one-quarter of the surface is suitable for agriculture. The farms for the most part lie along the fiords, and communication between the farms and the villages is largely by water in summer and over the ice in winter. Barley, oats, and potatoes are grown for home use, but cattle-raising is the chief occupation of the farmers. The cattle are kept in the stables in winter, and as the snow melts in summer, they are driven up the mountain-sides to feed on the luxuriant grass on the slopes. In this way valley grass is saved to provide hay for the winter. Almost all the butter and cheese is needed within the country.

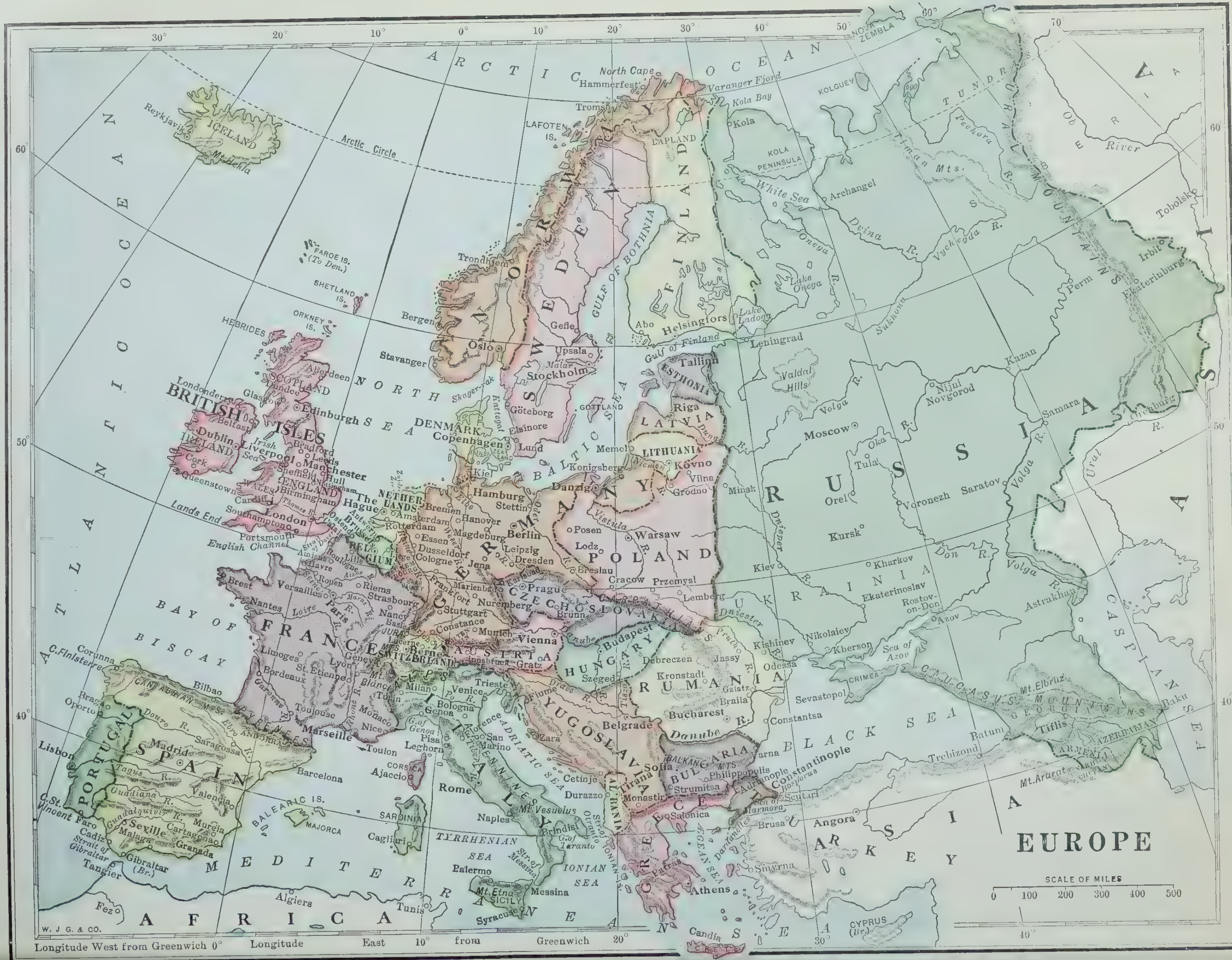
About one-fifth of the country is covered with forests. The pine, the oak, and the beech are the principal trees. The making of wood-pulp is one of the chief industries, the product being shipped mainly to Great Britain and the United States.

The length of the coast-line, the numerous fine harbors along the sea-board, and the proximity of the Atlantic fishing grounds make fishing the leading industry of the country. Over 100,000 men are engaged in the coast fisheries, while many others venture into the Arctic Ocean in search of whales and seals. Oyster-beds are found all along the coast. The inland waters, both lakes and rivers, teem with trout and salmon. Salted fish and cod-liver-oil are exported.

Norway is not rich in minerals, but silver and iron are being mined in considerable quantities. On account of the large number of mountain streams the absence of coal is not so much felt as might be expected. Electric power generated from these streams is very largely used in the manufacturing plants. The discovery of coal areas in the island of *Spitzbergen*, about 400 miles from the coast, has led the Norwegians to hope that they may soon have a cheap supply of coal from that source for domestic and other uses. The manufactures, outside of those connected with the forest and the fisheries, are not of great importance. Chemicals, however, are being exported in increasing quantities.

The Norwegians have a large carrying trade. Their ships are seen in all parts of the world, and their sailors help to man the ships of many nations.

The cities of Norway are mainly along the coast. *Oslo*, the capital, is situated on the


EUROPE
SCALE OF MILES
0 100 200 300 400 500
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Longitude West from Greenwich 0° Longitude East from Greenwich
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
BAY OF BISCAY
MEDITERRANEAN SEA
TYRRHENIAN SEA
ADRIATIC SEA
IONIAN SEA
ÆGEAN SEA
BLACK SEA
CASPIAN SEA
ICELAND
BRITISH ISLES
SCOTLAND
ENGLAND
IRELAND
NORWAY
SWEDEN
FINLAND
DENMARK
NETHERLANDS
BELGIUM
FRANCE
SPAIN
PORTUGAL
GERMANY
POLAND
CZECHOSLOVAKIA
AUSTRIA
HUNGARY
SWITZERLAND
ITALY
YUGOSLAVIA
RUMANIA
BULGARIA
ALBANIA
GREECE
TURKEY
ESTHONIA
LATVIA
LITHUANIA
RUSSIA
UKRAINIA
ASIA
AFRICA
URAL MOUNTAINS
CAUCASUS MOUNTAINS
London
Paris
Berlin
Rome
Moscow
Leningrad
Warsaw
Vienna
Madrid
Lisbon
Constantinople
Athens

Christiania Fiord. It is the chief industrial city and contains about one-tenth of the total population of the country. *Bergen* is the most important fish market of Norway.

Helps.—From the surface of Norway what would you expect the industries to be? What effect have the mountains on the industries? If coal were present, how would the manufactures be affected? Compare Norway with Canada as a lumbering country. What effect have the fiords on the occupations of the people? Why do not the harbors freeze in winter? Of what importance is the fishing industry? Why are there no inland cities? How is inland transportation provided for? Why is Norway celebrated as a tourist resort?

SWEDEN

The kingdom of Sweden occupies the eastern and larger portion of the Scandinavian Peninsula. In area it is somewhat larger than Norway and has a population more than twice as great. The Swedes resemble the Norwegians in their general characteristics, but their language is not at all the same. In the northern sections there are a large number of Finns and several thousand Lapps.

The surface is much less mountainous than that of Norway. It consists of a series of rolling uplands, falling in steps towards the sea. Numerous lakes, some of them very large, are scattered over the surface. There are also many rivers, useless for navigation, but, like those of Norway, valuable for water-power. The coast is indented with fiords running far into the land, forming many good harbors.

The climate is much more severe than that of Norway, and the rainfall is less. The heaviest rainfall is on the southern plain.

More than half of the surface of Sweden is covered with northern forest, which has given rise to a great lumber, wood-pulp, and paper industry. There are many saw-mills, furniture factories, and pulp and paper mills located at convenient points all over the country. The manufacture of matches is a thriving industry.

Less than a tenth of the soil of Sweden is adapted to agriculture, yet over half of the people are engaged in that industry. Stock-raising and dairying are of great and growing importance. Butter, bacon, hides, and wool are exported. Oats, rye, barley, and sugar-beets are the principal crops. In the northern section of the country the summers, like those of our Yukon Territory, are very short, but the long, hot days cause a very rapid growth.

Very valuable iron mines are found in Sweden. Much of the ore, on account of the lack of coal for smelting, is exported to Great Britain, but still there are hundreds of smelters in operation. Zinc, copper, and lead are also mined.

Many of the Swedes are engaged in the herring fisheries of the Baltic. Flour, sugar, woollen and cotton goods, machinery, and steel products are the leading manufactures.

Floating Timber in Sweden

Inland trade is easily carried on by means of lakes and canals. The country has nearly five times as many miles of railway as Norway.

Stockholm, the capital and largest city of Sweden, is picturesquely situated upon islands in *Lake Malar.* The harbor is excellent, but is icebound in winter. *Gothenburg,* on the *Kattegat,* connected with the capital by both rail and canal, has a large shipping trade.

Helps.—Compare the surface of Sweden with that of Norway. Compare their climates. Why do the harbors freeze in winter? What use is made of the mountain streams? the inland lakes? Compare in these respects with Canada. Why has Sweden more miles of railway than Norway? What effect has the Baltic coastline on the industries? Account for the three leading industries. Compare the northern section with the southern in regard to agriculture. Why is so much iron exported? Account for the location of the cities.

DENMARK

Included in the kingdom of Denmark are the greater part of the *Jutland Peninsula* and a number of the islands in the Baltic Sea. The largest of these islands are *Zealand* and *Funen.* In area Denmark is somewhat more than half as great as New Brunswick. The population is a little larger than that of Ontario. The people are exceedingly well educated and very industrious.

The two colonial possessions of Denmark are *Greenland* and the *Faroe Islands*—a group of about twenty small islands in the Atlantic Ocean to the north of Scotland. These islands are sparsely populated. They supply the mother-country with wool, mutton, and fish.

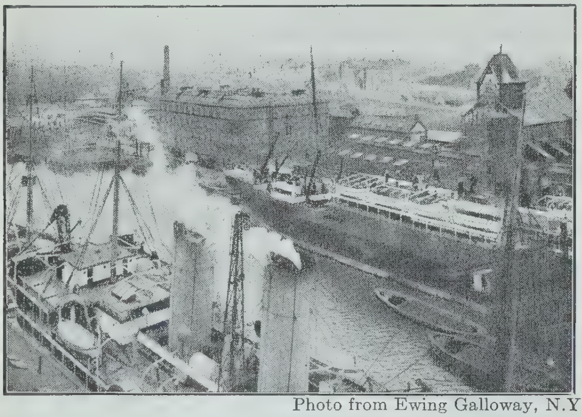

Photo from Ewing Galloway, N.Y.

Copenhagen Harbor, Denmark

The chief trade of the city is with the Baltic countries.

The surface of Denmark is low and flat, with gently rolling areas. It contains many marshes, small ponds or lakes, and peat bogs. The streams are short and not rapid. The western side of the peninsula has a low, sandy shore, with lagoons enclosed by sand-bars. On the eastern side the coast is higher, with a few safe harbors for small vessels. As the country lies within the path of the west winds, there is plenty of rain at all times of the year. Generally, however, these rains are raw and misty, so that the climate is frequently cold and unpleasant.

Large sections of Denmark are too sandy and boggy for purposes of agriculture, but there is much fertile land, especially in the eastern part and on the islands. The climate is too cool and damp for the cultivation of any but the hardier grains, such as barley, rye, and oats. Potatoes, however, are an abundant crop. Both soil and climate are ideally suited to pasturage, so that dairying is the chief industry. Millions of pounds of butter and millions of dozens of eggs are shipped annually to Great Britain. Danish bacon is also exported in large quantities to the British Isles. It should be noted that the creameries and the bacon factories are largely owned by the farmers themselves. Horse-breeding is also of prime importance.

The Danes have always been a maritime people. Thousands of their sailors man their own large commercial fleet, while many others find employment on the ships of other nations. Many are also engaged in the shore fisheries. As there is neither coal nor iron to be found, manufacturing is not so important an industry as it is in Sweden. The presence of many beds of clay of a very fine quality has led to extensive manufactures of pottery and porcelain. Fuel has to be imported, but some use is made of the numerous peat-bogs on the western side of the peninsula.

The capital is *Copenhagen,* on the island of Zealand, a very beautiful and interesting city, with large manufacturing interests and trade connections. *Aarhus,* the second city in size, on the east coast, and *Odense,* on the island of Fünen, are other important places.

Helps.—What effect has the surface on the industries? Why is the climate so moist? What effect has this on the occupations of the people? Why is Denmark so noted for dairy-farming? What are the chief exports to Great Britain? Why? Account for the industry of the Danes. Why are there not more manufactures? Why are there so few good harbors? What is the advantage of being so near Sweden? Describe the capital. Account for its commercial importance. On what countries does Denmark touch?

ICELAND

For centuries Iceland was a dependency of Denmark, but it is now a separate nation with the king of Denmark as its head. The island is very mountainous and is noted specially for its volcanoes, geysers, and hot springs. *Mount Hecla* is always active. In winter the climate is very cold, and even in summer it is not very warm. The inhabitants number about 100,000. There is good pasturage, and large numbers of sheep and ponies are shipped yearly to Great Britain. Many of the Icelanders are engaged in the cod and herring fisheries. The down of the eider-duck is an important article of export. *Reykjavik* is the capital.

Helps.—Why has Iceland so few inhabitants? What are the principal occupations of the people? How do the Icelanders provide themselves with fuel? Why do the Icelanders make such excellent settlers in Canada?

THE NETHERLANDS

The kingdom of the Netherlands (Low Countries) is also known as *Holland*, from the name of one of its provinces. Though measuring only 150 miles from north to south and 120 miles from east to west, it is one of the most important commercial countries in Europe. The population numbers almost 7,000,000. The people are industrious, thrifty, and intelligent.

The Dutch were among the most daring and successful of the early navigators and discoverers. Dutch seamen penetrated into every sea and claimed for their country many parts of the newly-discovered lands. Some of the fairest of these colonies have been lost, but enough remain to add materially to the wealth of the parent country. In the *East Indies* the Dutch hold some of the largest and richest of the islands. They own, also, *Dutch Guiana*, in the northern part of South America, and a few islands in the West Indies. Four-fifths of the trade of these colonies is with the home-land.

The surface of the Netherlands is a dead-level plain, in parts below sea-level. There are low elevations in the eastern, northern, and central parts of the country. Along the coast runs a long line of sand-dunes from thirty to one hundred feet in height.

The coast of the Netherlands for many miles consists of low, marshy swamps, formed by the sand and silt brought down by the Rhine and other rivers. These marshes have been drained by the Dutch, and huge embankments, or dikes, have been built to protect them from the sea. The land thus formed is kept free from water either by windmill or by modern steam or electric pumps. Hundreds of canals have been dug to connect the numerous rivers which flow through the plain.

The climate, owing to the nearness of the sea, is comparatively mild. The west winds bring plenty of moisture. The frequent heavy sea-fogs are very disagreeable and are injurious to the growth of the crops.

About two-thirds of the Netherlands is devoted to agriculture, gardening, and pasturage. Oats, rye, flax, and vegetables, including the sugar-beet, are the principal crops. The Dutch gardens are beautiful. The flowers are grown not only for the home market, but also for the seeds and bulbs, in which a large export trade is carried on. But it is in the live-stock and dairy-farming industries that the Dutch excel. Immense quantities of butter, cheese, poultry, and eggs are exported to neighboring countries, especially to Great Britain.

Photo from Ewing Galloway, N.Y.

A picturesque Bit of Holland

The village is behind the dikes and below the level of the sea.

The present-day Dutch, like their ancestors, are a maritime people. Fishing is a leading industry. The principal fish caught is the herring. Oysters also are obtained in great quantities.

The manufactures are very extensive. The raw materials are easily obtained from Great Britain and nearby countries in Europe, and from the Dutch colonies abroad. The windmills, driven by the strong and steady winds usual in the Netherlands, provide power for many of the factories. Dutch linens, woollens, paper, and pottery have long been famous. Other manufactures are silk, velvet, sugar, cocoa, chocolate, and tobacco pipes. Ship-building is a very important industry.

Internal communication in the Netherlands is easy on account of the canals. When they are frozen over in the winter, they can be used as roads. The flat tops of the dikes and embankments of the canals make excellent wagon roads. Railways are not so necessary as they are in most other countries, but still there are about 2,400 miles in operation.

The capital of the Netherlands, *The Hague*, stands about two miles from the North Sea. It is a beautiful city, with a celebrated art gallery. *Rotterdam*, situated on both sides of the *Meuse River* twenty miles from its mouth, is the chief commercial city of the Netherlands and one of the greatest ports of the world. Its chief trade is in the products of the Dutch colonies in various parts of the world. *Amsterdam*, built on a group of swampy islands at the south end of the *Zuider Zee*, is the largest city. It is built on piles, and the islands are connected by hundreds of bridges. Amsterdam has large commercial and manufacturing interests and is the world centre of the diamond-cutting industry.

A Windmill in Holland

The windmills are familiar features of the Dutch landscape.

Helps.—Of what use are the colonial possessions to the mother-land? How have the surface and coast-line affected the people and their industries? What is the purpose of the dikes? What use is made of the winds? What effect has the climate on the industries? Why are the Dutch such good farmers? Why is dairy-farming so profitable? flower-growing? Why is Denmark a considerable manufacturing country? What disadvantages has the country in manufacturing? How is internal communication carried on? Is the position of the country favorable for commerce? Use the map in answering this question. Name the two principal cities. Why are they important commercially?

BELGIUM

Belgium is little more than half as large as Nova Scotia, and yet it contains almost as many people as the whole of Canada. It is so densely populated that the whole country may be said to be one very large city. There are more people to the square mile in Belgium than in any other country in the world. The people are not all of one race, nor do they all speak the same language. In the south, French is the language of the people, while in the district bordering on Holland, Flemish is spoken.

Belgium controls a large section of the basin of the *Congo River* in Africa. This possession is of great value, not only as a market for her manufactured goods, but also for its trade in palm-oil, copper, copal, ivory, gold, rubber, and other tropical products.

The surface in the northern and western parts is low and flat, intersected by many small, sluggish streams. Some of the land has been reclaimed from the sea and is protected by dikes. In the south and east the country rises gradually and becomes rolling and hilly. On the low, sandy coast of forty-two miles there is only one good harbor, *Ostend*. As Belgium lies in the path of the west winds and is so near the sea, there is always plenty of moisture. The climate on the whole is equable, although in the northern sections the winters are raw and chilly.

The farmers of Belgium are very industrious and make the most of the soil. Large crops are produced; yet, even with more than half of the population engaged in farming, much food has to be imported. The principal crops are wheat, rye, oats, sugar-beets, and garden vegetables. Flax is grown for its fibre. In the drier sections, cattle, horses, sheep, and poultry are raised.

The chief manufacturing district of Belgium is the forest-clad, hilly region in the south-east. There coal and iron mines are found close together. Much coal and coke are exported. In this part, also, silver, lead, and zinc are mined. But the manufactures are not confined to iron and steel, nor are all the large factories in the hilly section. The rivers and canals are so numerous and the railways so excellent that the transportation of coal and raw materials within the kingdom is very easy. Consequently, there are throughout Belgium large cotton, woollen, cloth, and linen mills, as well as glass, carpet, and glove factories.

Selling Milk in Belgium

The position of Belgium in Europe gives her many trade advantages. Not only has she a large carrying trade with the countries of the interior of the continent, but she has in these countries a convenient market for the sale of her products.

Brussels, the capital, in the heart of the kingdom, has important manufactures, particularly of lace and carpets. *Antwerp*, though not on the sea-coast, has such a magnificent harbor on the *Scheldt River* that it is one of the largest seaports in Europe. It has railway communication with all parts of the continent. The most important manufacturing city is *Liége*, situated in the centre of the iron and coal districts. *Ostend*, on the coast, has a large shipping trade.

Helps.—Why is Belgium so densely populated? Compare the industries in the north and west with those in the south and east. Why the difference? Is there much diked land in Belgium? What effect has the climate on the industries? Why is Belgium such a great manufacturing country? What effect have the canals and railways on the manufacturing and commerce of the country? On what countries does Belgium touch? What effect has this on her commerce? Why are there no good harbors on the coast? Account for the commercial importance of Antwerp. Compare Belgium as an agricultural country with Holland and Denmark. Why the difference?

FRANCE

The republic of France has a most favorable situation on the western side of Europe. In area it is about half as large as Ontario, with a population nearly five times as great as that of the whole of Canada.

France has many important colonial possessions. Among these are *Morocco*, *Algeria*, *Tunis*, the *Sahara*, *French Western Africa*, and *Madagascar* in Africa; *French Indo-China*; some small places in India; *St. Pierre* and *Miquelon*, near Newfoundland; *Martinique* and *Guadeloupe* in the West Indies; *French Guiana* in South America, and a number of small islands in the Pacific Ocean. These colonies are of great value to France as a market where she may sell her home products, and as a source of supply for the raw materials required by her factories.

Shepherds, The Landes, France

Northern and North-western France lie in the great plain of Europe. This plain is drained towards the west by the Seine and its tributaries, the *Marne* and the *Aisne*. The larger part of Central France is a plateau, rising steeply from the west side of the Rhone Valley and sloping towards the Atlantic Ocean. East of the Rhone Valley are the *Jura Mountains* and the Alps. At the north end of the French Alps is *Mount Blanc*—the highest peak in Europe. Along the south-western coast is an area of shifting sand known as the "landes." The winds are constantly carrying this sand farther and farther inland.

The great rivers of France are the Seine and the Rhone. Their valleys form routes of trade from rich industrial regions to important ports. The Loire and the *Garonne*, flowing from the central plateau, are smaller streams. Their headwaters are so interlocked with neighboring rivers that they have been linked together by canals in a network of waterways. These waterways are a great aid to the internal trade of the country.

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A Vineyard in France

France lies on the windward side of the continent, and hence the climate, in general, is moist and never severely cold, except in the mountains. East of Marseille the winter climate is warm and delightful. The mountains protect this region from the cold winds of the north, and the warm waters of the Mediterranean wash its shores.

Nearly half the people of France are engaged in farming. For the most part the farms are small and are cultivated by those who own them. In the northern plain, in the valleys of the Loire and the Rhone, and in *Alsace-Lorraine*, wheat is the principal crop. Rye, barley, and oats are grown on the poorer soil. Potatoes for the making of alcohol, much used as a fuel, and sugar-beets are cultivated where the soil is favorable. The raising of horses is a profitable industry, especially in *Normandy* in the north-west. From there comes the Percheron, so familiar as a draft-horse in this country. Cattle, sheep, swine, and mules are also raised in large numbers. Dairying is especially important in the north.

In Central and Southern France the countryside is covered with vineyards. More grapes are grown there than in any other country in Europe. The warm climate and rich soil are equally suited to the growth of the mulberry tree, on which the silk-worms feed. In the region along the Mediterranean Sea, and in the southern part of the valley of the Rhone, oranges, lemons, olives, chestnuts, and walnuts are grown.

The principal mining districts lie close to Belgium, but the mines there were seriously damaged during the Great War. However, France's supply of coal has been very materially increased since the War by the acquisition of the Saar Valley, while the possession of the iron ore resources of Lorraine places her second only to the United States as a potential iron-producing country. Salt is found in abundance. Fine china and pottery clays and building-stone of a superior quality are other valuable products. There are large deposits of potash in Alsace.

Fish is one of the staple foods of the French people. In the early days of Canadian history, the French fishermen were in the habit of visiting the Grand Banks of Newfoundland. They still go there, using as their base the small islands of Miquelon and St. Pierre. Most of the fish caught, however, come from the fishing grounds of the North Sea. There are valuable oyster-beds along the coast of the Bay of Biscay, and sardines are caught in immense quantities both in the bay and along the shores of the Mediterranean. France has a large export trade in canned sardines.

Almost one-seventh of the surface of France is covered with trees. Many of these, such as the mulberry, the chestnut, the walnut, and the olive, are cultivated trees, but there are many large forests containing oak, elm, beech, and pine, from which timber is obtained. The forests are very carefully supervised, and reforestation, that is, the planting of seedlings in areas which have been cut over, is insisted upon.

France has always been famed for the quality as well as the quantity of its manufactured products. The largest manufacturing centres are near the coal fields. Electric power, generated from the mountain streams, is more and more coming into use in the factories.

The people of France have a natural appreciation of grace and beauty, and so they have specialized in jewellery, fine china, laces, ribbons, gloves, hosiery, dresses, hats, and similar articles that require artistic skill and care in the making. Of the other manufactures, silks, cottons, and wines are the most important, although there are large woollen, linen, and carpet factories, and many iron foundries and steel mills.

The cities of France are numerous and important. *Paris,* on both sides of the Seine River just below its junction with the Marne, is the capital and largest city. It lies in the midst of the most fertile district of France. Railways radiate from it in all directions, and canals connect the Seine with other important rivers. It has no difficulty in procuring raw materials, both from foreign countries and from the neighboring districts in France, so that it is one of the great manufacturing cities of the world. It is a very beautiful city, with wide streets, boulevards, and parks, and has many beautiful churches, such as the Cathedral of Notre Dame, art galleries, such as the Louvre, handsome public and private buildings, triumphal arches, and monuments. Paris is the political, industrial, literary, scientific, and artistic centre of France. Near the city is *Versailles,* which contains the magnificent palace and pleasure grounds of the former kings of France.

While small sea-going vessels can proceed up the Seine as far as Paris, the larger ships have to unload their cargoes at either *Havre* or *Rouen.* The latter is a flourishing port, with miles of docks. It is also a centre for the manufacture of cotton. *Boulogne* and *Calais,* on the Strait of Dover, have large trade connections with England. *Toulouse* and *Bordeaux,* on the Garonne, are important cities. The former is situated in the midst of a rich agricultural country, and the latter is famous for its wine and for its steel and other manufactures. *Lyon* is the leading silk city, and *Limoges* is equally celebrated for its china. *Marseille* is one of the largest ports on the Mediterranean and has large soap works. *St. Etienne* is also famous for its steel. *Lille,* near the north-eastern coal fields, has large iron and steel foundries. *Strasbourg,* on a tributary of the Rhine, is a flourishing industrial city. *Reims,* in the north-east, has many woollen factories. Its superb cathedral, built in the thirteenth century, was almost totally destroyed during the Great War. Other smaller places will long remain in the memory of Canadians—*St. Julien, Courcelette, Arras,* and *Vimy.*

The Arch of Triumph, Paris

This is the largest triumphal arch in the world. It commemorates the victories of the Emperor Napoleon.

The ancient cathedrals and historic ruins of France and her far-famed museums and art galleries attract many travellers. Tourists often spend the winter on the *Riviera,* as the south-eastern coast of France and the adjoining district in Italy are called. The Riviera is so beautifully situated and has such a delightful climate that it is almost like a bit of the tropics dropped down on the shores of the Mediterranean. *Nice*, famous as a health resort, is the principal city in this lovely section of France.

Lying off the west coast of Italy is the island of *Corsica*, famous as the birthplace of the Emperor Napoleon I. The surface is mountainous and densely forested. All over the island grow the olive and the chestnut, the nuts of the latter being the chief food of a large part of the population. Much timber is exported, and there are many marble and alabaster quarries. Coral is collected along the coast. *Ajaccio* is the chief town.

Photo from Ewing Galloway, N. Y.
The Promenade at Nice, the Riviera

Helps.—On how many countries does French territory touch? Show how this affects the commerce of the country. What effect have the Alps and the Pyrenees on the commerce of France? What is the value of the Rhine to French commerce? What is the importance of the Bay of Biscay coast? of the Mediterranean coast? Suppose the Pyrenees extended along the southern coast of France, what would be the result? What is the effect of the English Channel on French commerce? Why are the rivers of such importance commercially? Show how the headwaters of these rivers are connected. What is the effect on commerce? How is France provided with railways?

If the Rhone flowed into the Bay of Biscay instead of into the Mediterranean what would be the effect on French commerce? Account for the location of the chief industries. Locate the coal and iron fields and the chief water-powers. Why is France noted for its manufactures? Account for the location of each. What is the importance of the grape vine and the mulberry tree? Locate on the map the ten chief cities and account for the importance of each. Why is France so interested in the Saar Basin? Describe the island of Corsica. For what is the Riviera noted? Name the chief colonial possessions of France. Of what importance are these?

SWITZERLAND

The confederation of Switzerland is one of the few inland countries of Europe; at no point does its territory touch upon the sea. It is a mountainous country, about half as large as New Brunswick. Like most mountaineers, the Swiss are devoted to their homes and to their country. They are, for the most part, strong in body, cheerful and happy in their homes, good farmers, and excellent workmen. If they were not so, they could not support themselves within the rugged, mountainous districts where they dwell.

About half of Switzerland is occupied by mountains. Between the Jura Range on the north-west and the Alps on the south, is a valley, sometimes called the *Lowlands*. This is the chief agricultural section, and there are situated all the larger cities and towns. Many large rivers have their sources in Switzerland, but in their course through that country they are so steep and rapid as to be useless for navigation. Many of the beautiful mountain lakes, such as *Geneva*, *Lucerne*, and *Constance*, are of importance as internal waterways.

Fortunately for Switzerland, there are many passes through the mountains that form a barrier around the country. Railways are thus enabled to enter with little difficulty. The Swiss realize how important railways are, and where there is no natural pass they have tunnelled through the mountains. Two of these tunnels—the *St. Gothard* and the *Simplon*, on the route to Italy—are the longest in the world.

The west winds blow over Switzerland, thus ensuring a heavy rainfall and snowfall. Much depends, of course, upon the altitude. The snow lies upon the Alps all the year round at a height of about 9,000 feet. In the valleys there is a pleasant summer climate, caused by warm, dry winds from the south.

Although there is little land in Switzerland suitable for cultivation—about one acre in ten—agriculture is one of the chief occupations of the people. Wheat, rye, oats, and vegetables are raised, and, on the sunny hillsides in the lowlands, grapes and the mulberry tree. Most important of all is the dairy industry, for which the rich pastures and abundance of hay are well suited. Cheese, butter, condensed milk, and milk chocolate are exported in large quantities.

Over a third of the people of Switzerland are engaged in manufacturing. Although there is very little coal, this scarcity is more than made up for by the water-power provided by mountain streams. There is little raw material, but the nearness of the country to France, Germany, Austria, and Italy makes it easy to import whatever is needed. The Swiss are noted particularly for their wood-carving, jewellery, toys, silks, lace, embroidery, and plaited straw goods, articles light in weight and easily handled. Much of the labor is done in the homes of the people, who take a pride in their work. The skins of the goats and kids are used for the manufacture of gloves. Cotton, for which the raw material is imported, and silk are the chief textiles. Swiss clocks and watches are famous. The making of chemicals and dyes is an old-established industry.

An Alpine Village, Switzerland

Switzerland is celebrated all over the world for its wonderful scenery—giant mountains, immense glaciers, beautiful streams and lakes. In consequence, there is a steady stream of visitors to this "playground of Europe" during both the summer and the winter months. Thousands of Swiss find employment in taking care of this small army of tourists. Indeed, the "tourist industry" is one of the most important in Switzerland.

Bern, the capital, *Zurich*, the largest city, *Basel*, and *Geneva* are busy manufacturing and commercial centres. The latter city is noted for its educational institutions. It is now the official meeting-place of the representatives of the League of Nations.

Helps.—Compare the surface with that of Norway and Sweden. What is the advantage to the Swiss of the mountainous nature of their country? On what countries does Switzerland border? What are the advantages in such a location? Why has Switzerland such an abundance of water-power? What use is made of this? Why do not the Swiss engage in the manufacture of heavy articles? What is the disadvantage in the country having no sea-coast? What is the advantage in the tourist traffic? Name the most important cities. For what is each noted? Find out what you can about the Simplon and the St. Gothard tunnels.

GERMANY

The republic of Germany occupies a large portion of the western part of the great plain of Europe. Its territory touches upon that of eleven nations, while both the Baltic and the North Sea border its shores. The area of the country is about two-thirds that of Alberta, but the population is over seven times as great as that of our entire Dominion.

Northern Germany is an extensive plain, sloping towards the Baltic and the North Sea. The surface is rolling, with low hills and numerous small lakes. As it approaches Holland, however, the plain is low and flat. In the centre and the south the country becomes a plateau with high hills and forest-clad mountains. In the extreme south is a part of the northern slope of the Alps, with many lofty peaks.

The greater part of Germany is drained into the Baltic and the North Sea. The principal rivers are the Oder, which flows into the Baltic, and the Elbe, *Weser*, and Rhine, which empty into the North Sea. The Danube and the Rhine drain the southern section. In addition, Germany possesses a most remarkable system of artificial waterways. Canals connect the Rhine with the Seine, the Rhone, and the Danube, while there is a waterway between the Elbe and the Vistula. Most important of all, to avoid the long voyage around the north coast of Denmark, the Germans built the *Kiel Canal,* fifty-three miles long, across the narrow neck of land between the Baltic and the North Sea.

The west winds temper the climate of the western part of the northern plain. As the distance from the sea increases, the winter temperature is lower. The German ports in the North Sea are open all the year, but those on the Baltic are frozen for several months during the winter. Southern Germany, in spite of its more southern latitude, has about the same climate as the northern part, on account of its elevation. The summers, however, are warmer than those in the north. The rainfall, while abundant in the western section, decreases towards the east. Everywhere there is sufficient moisture for agriculture.

Old Castles on the Banks of the Rhine

Germany is, above all, an agricultural country, about half of its total area being suited to the raising of crops. In many districts of the north the soil is light. These parts are devoted to the raising of rye, potatoes, and sugar-beets. The grassy lowlands of the north have been given up almost entirely to the cattle-raising and dairying industries. In the valley of the Rhine all the cereals of the Temperate Zone are grown. This is the richest agricultural district of Germany, with fertile soil and a warm, moist climate. Hops, tobacco, and fruits, especially grapes, grow luxuriantly. The vineyards of the Rhine valley are famous; the terraced hillsides covered with vines are a sight not soon forgotten.

Over the whole country, rye—much used by the people in the making of bread—potatoes, sugar-beets, wheat, and barley are the principal crops. Everywhere much attention is paid to the raising of horses, sheep, cattle, and poultry, and to the making of butter and cheese. Hogs are pastured in the forests, where they feed on the beechnuts and acorns, and in the beet-sugar districts, where they live on the beet-pulp refuse from the factories.

The forested area of Germany is large. The principal trees are fir, pine, spruce, beech, and oak. A large part of the timber obtained from the forests is used in the manufacture of toys, but much is used in the making of wood-pulp and paper.

Germany contains enormous deposits of coal, but the greater part of the iron used in manufacturing must now be imported. Zinc, silver, copper, and salt are also mined. Potash, much used as a fertilizer, is found in immense quantities in the highlands, and there are many districts where valuable clays, used in the manufacture of china and porcelain, are obtained.

From what has been learned about her agricultural, timber, and mining resources, and her system of internal waterways, supplemented by a perfect network of railways, it must be evident that Germany is a great manufacturing country. Machinery, cutlery, and hardware are turned out in amazing quantities. The building of steel ships is also an important industry. The list of other commodities manufactured in Germany is so long that it would be useless to enumerate them all, but among the best known are beer, beet-sugar, paper, textiles, silk, toys, china, dyes, drugs, chemicals, electrical and musical instruments, jewellery, chocolate, and tobacco. The wine industry of the Rhine district is a thriving one.

Berlin is the capital and largest city. It lies in the centre of the great northern plain between the Oder and the Elbe, and from it radiate in all directions the railways with which Germany is covered. It has a large number of factories, museums, and art galleries, and many magnificent public and business buildings.

Hamburg, the city second in population, is situated near the mouth of the Elbe. It is the most important seaport in Northern Europe and has excellent docks and docking facilities. *Stettin* and *Kiel* share with Hamburg a great industry in the building of ships. At *Essen* are located the famous Krupp steel works. *Bremen*, on the Weser, has an excellent harbor and a large shipping trade. *Dresden*, on the Elbe, is noted for its museums and art galleries and for the manufacture of china. At *Cologne* is a famous Gothic cathedral—one of the most beautiful Christian churches in the world. This city, which is situated on the Rhine, has large industrial and commercial interests. *Munich*, on a small tributary of the Danube, is a railway centre, with large art factories and art galleries. *Nuremburg* is the centre of the great toy industry of Germany. *Leipzig* and *Jena* are famous as university towns.

Photo from Ewing Galloway, N. Y.

A Pontoon Bridge over the Rhine at Cologne, Germany

Helps.—On what countries does Germany touch? Locate the rivers. What is the commercial importance of each? What is the advantage of the huge canal system? How would you get by water from Berlin to the sea? What is the importance of the Kiel Canal? Compare the Baltic seaports with those on the North Sea. Point out the advantages of each. Locate the agricultural areas; the manufacturing areas; the forest areas. What effect has the climate on agriculture? Locate the coal and iron districts. Why is Germany such a great manufacturing country? What use is made of water-power? Account for the foreign trade of Germany. Account for the location of the most important cities.

AUSTRIA

The republic of Austria lies entirely inland. It is very little larger than New Brunswick, with a population about two-thirds that of Canada. The people are mainly of German descent and speech.

The surface is varied. The eastern part is Alpine, with rugged mountains, deep valleys, and dense forests at the bases of the hills. The mountain scenery of *Tyrol*, one of the Alpine provinces, is unsurpassed in Europe. The remaining part includes the plain on both sides of the Danube. The summers are warm, and the winters are cold. The summer climate is favorable to the growing of grains and vegetables, although the plain of the Danube has but a light rainfall.

Scattered through the mountain districts are many fertile valleys, and in these and on the plains agriculture is carried on. The chief products are wheat, rye, oats, sugar-beets, potatoes, and some tobacco. Cattle and sheep are raised. The forests contain valuable timber. Iron, coal, copper, lead, and mercury are mined, but not in large quantities. The numerous mountain streams provide electric power, so that there are many manufactures, the principal being glass, porcelain, lace, silk, and musical and surgical instruments. Austria is shut out from the sea, but has the free use of the Danube for trade purposes.

Photo from Ewing Galloway, N. Y.

A Cattle Farm on the Danube

Vienna, the capital and chief city, with a population of over 1,750,000, is delightfully situated on the Danube. It is a beautiful city, with broad, tree-lined avenues and handsome buildings, and has long been celebrated for its museums and art galleries. It is also a commercial and industrial centre with many manufactures. All the important railways connecting Germany with Italy and with the Balkans pass through Vienna, as does also the commerce of the Danube. *Graz*, the second city in size, has large smelting works. *Innsbruck*, in the Alpine region, is a glass and textile manufacturing centre.

Helps.—On what countries does Austria touch? How does the surface affect the industries? By what means has Austria access to the sea? Of what advantage is the Danube? Account for the nature of the manufactures. What use is made of water-power? What are the chief occupations of the people of Austria? Account for the very large population of Vienna.

Photo from Ewing Galloway, N. Y.

Budapest on the Danube

HUNGARY

The republic of Hungary is very little larger than Austria both in area and in population. The *Hungarians*, or *Magyars*, are the descendants of an Asiatic tribe which settled in Hungary over a thousand years ago. They are thrifty and industrious, though somewhat fierce and warlike.

The surface is an undulating plain, drained by the Danube and its tributaries, with mountains on the north and the east. The climate is subject to sudden changes. The winters are cold, and the summers, especially on the plain, are very hot and dry. The mountain districts are well watered, but on the lowlands there are frequent prolonged droughts.

Agriculture is the principal occupation of the people. The soil is fertile and, except in dry seasons, produces good crops of wheat, corn, sugar-beets, and tobacco. Swine and poultry are raised in large numbers. There are also great tracts of grazing-land, upon which cattle, horses, and sheep are raised. Considerable lumbering is carried on in the foothills of the mountains. The chief manufactures are flour, beer, tobacco, and beet-sugar.

Budapest, the capital and largest city, is made up of two cities, *Buda*, on the high western bank of the Danube, and *Pest*, on the low land on the opposite side of the river. The city is favorably situated at the point where the Danube issues from the Carpathian Mountains, just on the border of the great agricultural plain. The principal manufacture is flour. The national university is situated there.

Helps.—Why should agriculture be the chief occupation of the people? What is the importance of the Danube? Why are the lowlands subject to prolonged droughts? Account for the nature of the manufactures. What are the disadvantages of being inland? Account for the importance of Budapest.

CZECHOSLOVAKIA

The republic of Czechoslovakia is almost as large as Austria and Hungary together, and has a population equal to theirs combined. Like Austria and Hungary, it is shut in from the sea. It has, however, in common with other countries, the free use of the Danube, the Oder, and the Elbe Rivers, and privileges in various harbors, such as *Stettin*, on the Oder River, and Hamburg. The Czechoslovaks are a progressive and industrious people belonging to the Slavonic stock. In the rural districts a large part of the population lives in communities, each farmer with his family residing in the village and having his land near at hand.

The surface is a hilly plateau, surrounded on the west, north, and north-east by mountains. There is also a hilly region in the south-east. From the plateau the Danube gives Czechoslovakia access to the Hungarian plain, while the Elbe gives connection with the plain of Germany. As in the surrounding countries, the summers are hot and the winters cold. There is plenty of rain in the mountain districts, but not so much on the plateau itself.

Czechoslovakia raises enough food to maintain her population. There is much fertile land in the mountain valleys and on the plain itself, and wheat, corn, hops, barley, beets, and tobacco are raised. There are also large tracts of excellent grazing-land. Almost unlimited water-power has greatly aided the growth of large manufacturing industries. Breweries, flour-mills, and sugar factories are in operation at many places. The hides and skins from the cattle and sheep are used in the manufacture of leather and leather goods.

Photo from Ewing Galloway, N.Y.
The City of Prague, Czechoslovakia

Lumbering is carried on in the forests which clothe the bases of the mountains, and the timber is turned into furniture, wood-pulp, and paper. The presence of kaolin and other clays has made possible the china, porcelain, and glass industries. Bohemian glass, named after the rich province of *Bohemia* in the north-west, has been famous for centuries. The Carpathians yield iron, coal, graphite, gold, and silver. As the coal and iron are found close together, Czechoslovakia has become a great steel country. Cotton, woollens, and linens are manufactured in the valley of the Elbe. Czechoslovakia sends large quantities of glass beads and artificial flowers to Canada.

The capital is *Prague*, an ancient city on the Elbe, in the midst of the most productive part of the country. It is a manufacturing, commercial, and railway centre. It has many beautiful churches and is the seat of the national university. *Brünn*, in the iron and coal district, has large plants for making machinery. The mineral springs of *Karlsbad* and *Marienbad* attract from all over the world invalids who come there for medical treatment.

Helps.—On what countries does Czechoslovakia touch? How has it access to the sea? Why has it so many manufactures? Name the chief of these and account for their location. Account for the china and glass industry. What are the advantages of the Carpathian Mountains? To what race do the people belong? To what peoples in Europe are they allied? Account for the prosperity of the country. Locate the principal cities.

POLAND

The republic of Poland is one of the few inland countries of Europe. It has, however, access to the Baltic Sea through the port of *Danzig*, at the mouth of the Vistula. Full protection for Polish commerce is guaranteed by the League of Nations. The country has an area a little over one-third as great as that of Ontario, with a population about three times as large as that of Canada. The people are of the Slavonic stock, and there are several million Jews.

Poland lies within the central plain of Europe. In the south, however, there is much rolling country bordering on the Carpathian Mountains, and in the north the country is very hilly, with many lakes and considerable marsh-land. This northern region is also densely forested. The most important river is the Vistula, which drains the greater part of the country. The rainfall is sufficient for agriculture.

The majority of the Poles are farmers, the principal crops raised being wheat, rye, potatoes, and sugar-beets. Dairy-farming goes hand in hand with the raising of crops.

Horse-breeding is also of importance. Southern Poland is well supplied with coal and iron, so that an extensive manufacture of iron and steel products has sprung up.

Photo from Ewing Galloway, N. Y.
A Part of the City of Warsaw, Poland

Other manufactures are cotton and leather goods. The country is very rich in minerals, including, in addition to those already mentioned, zinc, lead, and petroleum. The oil wells of *Galicia*, one of the provinces of Poland, are famous for their output. But most remarkable of all are the salt mines near the city of *Cracow*. The beds of salt are several hundred feet in thickness and extend for many miles. Some of these mines have been worked for centuries and are by no means exhausted yet.

Photo from Ewing Galloway, N. Y.
The City of Danzig
The building with the tower is the City Hall.

The capital is *Warsaw*, with a population of about a million, at the head of navigation on the Vistula, almost in the centre of the country. It lies in the midst of a fertile plain and has large manufacturing and commercial interests. *Cracow*, also on the Vistula, is the most important city in the south. It is a manufacturing centre. *Lodz* has a population of almost half a million. Other important commercial cities are *Lemberg, Posen*, and *Vilna.*

Helps.—In what great plain does Poland lie? Why should the surface be so swampy? Why should the larger number of the people be farmers? Of what importance is the raising of beets? Of what importance is oil? Where are the salt-beds situated? How has Poland access to the sea? What is the importance of the Vistula? Why is Warsaw such a large city? To what race do the people belong?

SIX SMALL STATES

There are in Europe six small states, all of which are more or less independent—*Danzig, Luxemburg, Liechtenstein, Monaco, Andorra*, and *San Marino*. The *Free City of Danzig*, which lies at the mouth of the Vistula, has an area of 754 square miles and a population of about 380,000. It is independent, but its foreign as well as many of its domestic affairs are looked after by Poland. The free city includes within its limits a number of small towns, villages, and rural communities. The chief exports are timber and sugar. The harbor is excellent, with every facility for handling ships. Poland has the unrestricted use of the port for her commerce.

The grand duchy of *Luxemburg* lies on the western border of Germany. It has an area of about a thousand square miles and a population of 260,000, mostly of German descent. Valuable iron mines are worked, and there is an increasing industry in the manufacture of iron and steel. Wine, vinegar, and pottery are also manufactured. The capital is *Luxemburg*, a small city, but with important manufactures of steel goods and clothing.

On the border of Switzerland, lying between that country and Austria, is *Liechtenstein*, a little independent principality. It has an area of sixty-five square miles and a population of about 11,000. The people are all of German descent. Agriculture is almost the sole industry. Many cattle are raised. The principal products are corn, wine, fruits, and timber.

The principality of *Monaco*, the smallest state in Europe, is situated on a promontory which juts out into the Mediterranean about nine miles from Nice. It has an area of eight square miles and a population of about 22,000. The capital is *Monaco*. Its suburb, *Monte Carlo*, is the great gambling resort of Europe. The principality is under the protection of France. The republic of *Andorra*, situated on the south side of the Pyrenees, is under the joint control of the President of France and a Spanish bishop. Its area is 191 square miles, with a population of about 5,500. The country is very rough and hilly. Most of the people are farmers or shepherds.

Photo from Ewing Galloway, N. Y.

Helsingfors, Finland

Near the Adriatic Sea, entirely enclosed by Italian territory, is *San Marino*, the most ancient republic in the world. It is thirty-eight square miles in area, has a population of 13,000, and has existed for over a thousand years. The people are engaged mainly in farming. The city of *San Marino* surrounds a citadel perched high upon a mountain 2,650 feet in height.

Helps.—Locate each of these six states. For what is each noted? What is the importance of Danzig to Poland? How have Luxemburg, Liechtenstein, and San Marino managed to maintain their independence?

THE BALTIC REPUBLICS

The Baltic Republics are so-called because they lie close together and all border on the Baltic Sea. The most northerly of the republics is *Finland*, which lies to the north of the gulf of that name and extends as far as the Arctic Ocean. It is about one-half as large as Alberta, but contains 3,300,000 people. The surface is hilly and covered with marshes, lakes, and immense pine forests. The soil is very stony. The climate is extreme both in summer and in winter, and the rainfall is not abundant. The leading industries—lumbering and the manufacture of wood-pulp, paper, and matches—are all connected with the forests. Most of the farmers are engaged in stock-raising, with a growing export trade in butter to Great Britain. On the southern coast fishing is of some importance. *Helsingfors*, the capital, is the seat of the Finnish University.

Esthonia lies to the south of the Gulf of Finland. Its area is somewhat smaller than that of Nova Scotia, and it has a population of 1,150,000. The people are closely related racially to the Finns. They are well educated and industrious. The surface is mainly a sandy plain, little suited to agriculture, with peat-bogs, lakes, and huge tracts of dense forests. These latter cover about one-fifth of the country. In summer the climate is damp, and the winters are cold. Potato-raising and dairy-farming are the main occupations of the farmers. Lumbering is carried on, together with the manufacture of wood-pulp and paper. The capital is *Tallinn*, an important shipping centre.

Photo from Ewing Galloway, N.Y.

The Fishing Fleet in the Harbor of Libau

Latvia is slightly larger in area than Esthonia and has about 1,800,000 inhabitants. The people, however, are akin to the Lithuanians. The surface and climate are very similar to those of Esthonia. The industries, also, are much the same, but farming is carried on in a more scientific way. Flax, oats, and barley, in addition to potatoes, are cultivated and exported. The capital is *Riga*, an important seaport at the mouth of the *Southern Dvina River.*

Lithuania is about one-sixth as large as British Columbia and has about the same population as Ontario. The people are a distinct stock, differing from both the Slavs and the Teutons, and have a language and literature of their own. The surface is mainly a level plain with large sand areas and huge forests. The summers are short and cool and the winters mild. The industries are much the same as in Latvia. *Vilna,* now in the possession of Poland, is claimed by Lithuania as its capital. *Kovno* is the present seat of government.

Helps.—Locate the Baltic States. Why are they so-called? Compare them in size and population. Compare their surfaces. Why should they all be so densely forested and have so much marsh-land? Compare their climates. What effect has this on the industries? What are the principal natural resources of each? Of what importance is the timber industry? Name and locate the chief city of each. To what races do the people belong?

THE RUSSIAN SOVIET REPUBLICS

The Soviet Republics which occupy the territory in Europe of the former Russian Empire make up the largest of the countries of Europe. They occupy almost the entire eastern part of the continent and extend from the Caucasus Mountains and the Black Sea in the south far into the Arctic Circle. The population is estimated at 60,000,000. The country is divided into a number of *Soviet Republics*, that is, republics controlled by committees of workingmen. The most important of these are *Russia*, *White Russia*, *Ukrainia*, and *Crimea*, but their boundaries are not clearly defined. The Soviet Republics in Europe and Asia are joined together as the *Union of Soviet Socialist Republics.*

With the exception of the Valdai Plateau, which itself is flat and only about 1,100 feet in height, the surface of the country is a remarkably level plain. Most of the rivers have their sources in this height of land. The Volga, after a course of 2,200 miles, nearly all of which is navigable, enters the Caspian Sea. The Dnieper and the Don flow into the Black Sea, and the *Dvina* into the White Sea. The *Pechora,* however, rises in the Ural Mountains and flows into the Arctic Ocean. These rivers are invaluable for inland navigation during the summer months.

Photo from Ewing Galloway, N.Y.

Soviet Peasants at Work

Canals have been dug from river to river, so that there are water-routes in all directions. The surface of the country is dotted with lakes, especially in the north and west. *Lake Ladoga,* which is nearly as large as Lake Ontario, is the largest lake in Europe.

The plain bordering the Caspian Sea on the north is below sea-level. In fact, the Caspian Sea itself is eighty-five feet below the level of the Mediterranean. It has no outlet, and its waters, through constant evaporation, are very salty. There are many small lakes of a similar character in this district.

The Ural Mountains, which form the eastern boundary of the Republics, are very low and with such gentle slopes that they can scarcely be said to be mountains at all. On the other hand, the Caucasus Mountains are a magnificent range, with lofty peaks, deep valleys, and immense glaciers. *Mount Elbruz,* an extinct volcano, is one of the highest mountains in Europe.

The climate of the country varies with the latitude. In the north it is arctic. In the centre the winters are cold, and the summers are very hot. In the south the climate is very warm all the year round. Increasing distance from the Atlantic tends to make the winters colder. The rainfall, although nowhere abundant, is sufficient for agriculture, except in the district around the Caspian Sea, where rain scarcely ever falls.

The northern part of the country is unproductive. It is inhabited chiefly by *Lapps*, whose reindeer feed, both summer and winter, on the grass of the tundra. South of the tundra is the forest region, consisting largely of evergreen trees. Furs, lumber, tar, and pitch are the chief forest products. South of the forest is the great agricultural region known as the "black earth belt." This is much like our western prairie, treeless, and with a rich, dark soil. In this district are grown wheat, oats, barley, hemp, flax, rye, sugar-beets, and potatoes. Tobacco is also a valuable crop. Dairying is carried on, particularly the making of butter. The fertile area changes gradually towards the south and east into the more arid steppe region, where immense numbers of cattle, sheep, and horses are raised.

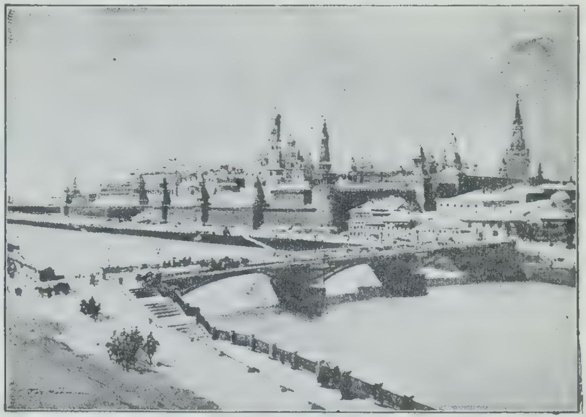
The country is also rich in minerals. Coal and iron are found in various parts, sometimes so close together that smelters can be easily operated. Especially in the Ural Mountains, mining assumes the importance of a great industry. There plantinum, gold, silver, copper, iron, and graphite are found. The platinum mines are of enormous value, as the greater part of the world's supply of this precious metal comes from them. Petroleum in large quantities is found near the Caspian Sea.

The fisheries are very important. Sturgeon are caught in the lower Volga and in the Caspian Sea. The preparation and export of the roe of the sturgeon as "caviare" employ a large number of people. The herring fisheries off the White Sea coast and the seal fisheries of the Arctic Ocean are also valuable. Fish is one of the chief foods of the peasantry.

Much of the manufacturing was and still is carried on in small shops and in the homes of the people. The iron and steel industries have declined during the last few years, but cottons and woollens are extensively manufactured. The manufacture of silk, the raw material for which is obtained from the Caucasus and from *Turkestan*, is of importance.

The chief exports at present are sawn timber, fish, hides and skins, oil, and flax in the order named.

In the Republics there are over 150,000 miles of rivers, lakes, and canals navigable for steamers, in addition to thousands of miles available for small boats and rafts. Railways are not, therefore, so important as they are in some other countries not so favored by nature. About 45,000 miles of railway are in actual use. Most of the lines centre in *Moscow*.



Courtesy of Thos. Cook & Son, London.

The Kremlin, Moscow

The most important city is the capital, *Moscow*, or, as the peasants reverently call it, "Holy Mother Moscow." It is situated on a navigable tributary of the Volga, in the very heart of the country and within easy reach of the black earth belt. Coal is found near at hand, so that it has many manufactures. It is also a railway, commercial, and distributing centre. Many magnificent churches and handsome public buildings adorn the city. The population numbers over two millions.

The former capital, *Leningrad*, on the Gulf of Finland, was founded over two centuries ago by Peter the Great. It is a busy city, with a large shipping trade, and has a population of over a million and a half. It is beautifully laid out and has many fine public buildings. *Archangel*, on the White Sea, is an important shipping point during the summer months. *Kiev*, on the Dnieper River, is a strikingly picturesque city and is a commercial and industrial centre. *Odessa*, on the Black Sea, is both a seaport and a manufacturing city. It has a population of about 400,000. Other important cities are *Nizhni Novgorod* on the Volga, a trading centre, *Perm*, a mining city at the base of the Ural Mountains, *Tula*, a steel city south of Moscow, and *Astrakhan*, at the head of the Caspian Sea.

Helps.—What is the commercial importance of each of the physical divisions? Describe the climate showing its effect on the occupations of the people. What is the importance of the Valdai Hills? Locate the rivers on the map and show how their headwaters may be connected. What is the advantage of these canals in summer? in winter? Can you go by water from the White Sea to the Caspian Sea? Why has the country enormous possibilities in agriculture? Describe the "black earth belt" and the steppes. What advantage to Russia are the ports on the Black Sea? on the northern coast? on the Caspian Sea? What effect have the Caucasus Mountains on Russia? the Ural Mountains? Why are there few manufactures in Russia? Locate Moscow and account for its importance. Locate Leningrad. Why is it not now so important as formerly? What is the importance of Odessa? Locate three other leading centres. To what race do the people belong? What is their form of government?

Spring Ploughing in Rumania

RUMANIA

The kingdom of Rumania, situated between Hungary and the Black Sea, has an area about one-half as large as that of Alberta and a population nearly double that of the whole of Canada. The people are peaceful and industrious, but they are poorer and have fewer of the comforts of life than many of their neighbors. Their language is akin to the Latin, with a strong strain of Slavic.

North of the great plain of the Danube and west of the plain of the *Dniester* and *Pruth Rivers*, the surface is very mountainous. On the border adjoining Hungary, however, there is a plain of considerable extent. The climate on the higher levels is quite severe in winter, but on the plains, while the winters are cold, the summers are warm. There is sufficient rain for farming, although towards the south-east the rainfall is light.

On the plains and in the valleys agriculture is the leading industry. Immense crops of wheat, corn, and barley are raised. In the drier parts, horses, cattle, and sheep wander in large herds. Dense forests clothe the mountain-sides, giving employment to many men in lumbering and the making of wood-pulp and paper. Coal, iron, gold, and salt are mined, and there are large petroleum districts. The principal manufactures are leather goods and flour. The country is well provided with railways. Communication by sea with the outside world is maintained through the Danube River and the Black Sea.

Bucharest, the capital, is situated in the midst of a swampy plain on both sides of a small tributary of the Danube. It is a picturesque city, the home of the wealthy classes, and the seat of the national university. *Kronstadt*, in the heart of the mountain district, is a manufacturing city.

Ocean-going vessels can proceed up the Danube as far as *Galatz*—the chief shipping port of the country.

Helps.—Why is the soil in general so fertile? What are the chief natural resources? What is the importance of the lumber industry? On what countries does Rumania touch? What is the importance of the Danube? If the country were shut out from the Black Sea, what would be the effect on its industries and commerce? Locate the capital. What is the importance of Galatz?

SPAIN AND PORTUGAL

Jutting out from the mainland of Europe towards the south-west is the Iberian Peninsula, comprising the kingdom of Spain and the republic of Portugal. The peninsula is separated from France by the Pyrenees Mountains, lofty, snow-capped, and almost impassable. On the south the Strait of Gibraltar, about ten miles in width, separates Spain from Africa. The whole peninsula is slightly smaller than Alberta, while Portugal alone is somewhat larger than New Brunswick. The population is about 28,000,000, of whom one-fifth live in Portugal.

Spain is not now a colonial power. She possesses only the *Canaries* and some small colonies in Africa. Portugal has been more fortunate and has large colonies in Africa, in addition to the *Madeira*, the *Azores*, and the *Cape Verde Islands*. The *Balearic Islands* in the Mediterranean, the largest of which are *Majorca* and *Minorca*, belong to Spain.

The greater part of the Iberian Peninsula is a central plateau, bounded on the north by the Pyrenees and *Cantabrian Mountains* and on the south by the *Sierra Nevada Range*. Across the plateau from east to west run numerous short ranges. The plains of the *Guadalquivir* and *Ebro Rivers* are the most productive sections. The northern region is entirely mountainous, while a narrow strip of lowland runs almost around the peninsula. The rivers are rapid and contain but little water. They are, for the most part, of little use for navigation.

The climate varies greatly. The elevation has much to do with this variation. As a rule, the winters are wet and cold and the summers dry and very hot. The west winds bring an abundance of rain in the winter, but a large part of this falls along the coast, as the winds lose their moisture in passing over the mountains. The southern section has little rain. The temperature of the whole country, moreover, is greatly modified by the Pyrenees Mountains, which cut off the cold winds of northern Europe.

In many parts of the country irrigation is necessary for agriculture. It is in these parts that the people are the most progressive and the production is greatest. In the south, rice, grapes, olives, oranges, lemons, figs, dates, and even some cotton are grown. Wheat, however, is the staple crop. The uplands furnish pasture for immense flocks of sheep, Spain being one of the great sheep countries of Europe. Cattle also are raised, but mainly for local consumption. The stripping of the bark from the cork-oak furnishes employment for many people.

Wrapping Oranges for Export

The mineral resources are very great, but they are mainly in the hands of foreigners. Spain ranks next to the United States in the production of quicksilver, and in copper production is fourth among the nations. There are many coal mines that were in operation in the time of the Romans, but these are now little worked. The iron mines of the north yield enormously, but the product is almost all shipped to Great Britain. Lead and silver are found in large quantities.

The fishing industry along the coast is not so important as one would expect from the length of the coast-line. Off the west coast of Portugal, however, sardines are caught in immense quantities and are a staple article of food. There are many factories, particularly in and near *Lisbon*, where sardines are canned and exported to all parts of the world.

Stripping Bark from the Cork-oak, Portugal

Although there is some manufacturing in the cities, the output of the factories barely supplies the home market. There is plenty of raw material, but the Spaniards and the Portuguese find it much easier to export this than to manufacture it themselves. Iron and steel goods, however, are being manufactured in increasing quantities in the coal and iron district of the north. Wine is the chief export of the two countries. Cottons, woollens, jewellery, glass, and china are also manufactured.

Madrid, on a tributary of the *Tagus River*, is the capital of Spain. It is not important as an industrial centre, although it has a population of three-quarters of a million. It contains many fine buildings, but its beauty is spoiled by the appearance of the surrounding country, which is almost a desert. *Granada*, high up among the mountains, contains the Alhambra, the famous palace of the Moorish kings of Spain, now only a magnificent ruin. *Seville* has important manufactures, the principal being tobacco. *Cadiz* is a strongly fortified naval station. *Valencia*, surrounded by a lovely and fruitful country, and *Barcelona*, with its excellent harbor, are leading manufacturing centres.

Lisbon, the capital of Portugal, is situated at the mouth of the river Tagus. Its harbor is spacious, so that the city has an extensive shipping trade. *Oporto*, at the mouth of the *Douro River*, is the only other city of importance. From this city port wine is exported.

Helps.—What effect have the mountains on the climate, the industries, and the progress of the country? Compare the rivers as commercial highways with the rivers of France. What effect has the climate on the people and on the industries? Has the length of the coast-line been of material benefit to the people? Locate the mineral belts. Why has Spain not become a great manufacturing country? Has the character of the people anything to do with this? How do you account for the extreme fertility of the southern regions? What is the importance of the grape vine? the oak tree? the olive tree? To what extent is irrigation used in Spain? Is advantage taken of the mountain streams? Account for the large population of Madrid. Name six other leading cities and account for the importance of each.

ITALY

Italy is a peninsula, separated from France, Switzerland, Austria, and Yugoslavia by the Alps, and bordered on the west and east by the Mediterranean and Adriatic Seas. In shape it resembles a boot, with the island of *Sicily* at its toe. Off the west coast lies the island of *Sardinia*. Near the coast, also, is the island of *Elba*, where Napoleon was for a time exiled. The whole Italian kingdom has an area about one-half as great as that of Alberta. It contains a population more than four times as large as that of Canada.

The Italians have colonies in several parts of the world, particularly in Africa. There they have under their control *Libya, Eritrea*, and *Italian Somaliland*. On the whole they have not proved to be very successful colonizers.

The *Apennines* form the backbone of Italy. From the *Gulf of Genoa* on the north, where they touch the Alps, they extend southward through the peninsula. There are many fertile valleys in the mountains, but there are very few forests, except along the lower slopes. Formerly the entire mountain system was forest-clad, but the trees were long ago cut down. A spur of the Apennines which extends into Sicily contains *Mount Etna*, which is frequently in eruption. Near *Naples* is *Mount Vesuvius*, the most famous volcano in the world.

Lying between the Apennines and the sea on the west are many fertile districts. There is a great deal of marsh-land, very unhealthy on account of the malaria. This disease is spread by the mosquitoes, which breed there. To the east of the Apennines the country is fairly level, with tracts of pastoral and agricultural land. Few people live around the shores of the *Gulf of Taranto*, owing to the marshy nature of the soil.

Between the Apennines and the Alps and running down to the Adriatic Sea is the *Lombardy Plain*—the largest extent of lowland in Italy. This plain forms the basin of the river Po. The level plain is broken by the numerous tributaries of the Po. These tributaries, as well as the Po itself, have many waterfalls in their descent from the mountains. These provide water-power. High up in the Alps are a number of lakes, such as *Maggiore*, *Como*, and *Garda*, beautiful in themselves and valuable as reservoirs for irrigating the plains beneath.

As the mountains are near the sea, the rivers of Italy, with the exception of the Po, are short and of little use for navigation.

There are several reasons for the mildness of the Italian climate. In the first place, the Alps in the north prevent the cold winds from reaching the plains to the south, and, similarly, the Apennines protect the west coast. Secondly, Italy is almost entirely surrounded by the Mediterranean Sea, and its warm waters temper the climate. Except in the mountains, the temperature rarely falls below the freezing-point. In winter there is an abundance of rain, greater in the south than in the north, but the summers are dry. In consequence, irrigation is largely used, especially in the Lombardy Plain, where the lakes close by among the mountains furnish a never-failing supply of water.

Although there is so much mountainous and marshy land in Italy, agriculture is the chief occupation of the people. The climate is so favorable, the soil so fertile, and the water-supply so abundant, that in some parts four or more crops a year may be gathered. Not only the ordinary crops of the Temperate Zone, such as wheat, corn, oats, and barley, are raised, but many tropical products as well. Rice is grown in the irrigated fields of the Lombardy Plain. Mulberry trees flourish, and immense quantities of raw silk are produced. Grapes grow luxuriantly, making Italy second only to France in the manufacture of wine. In the south, oranges, lemons, and olives are cultivated. Chestnut trees, valuable for the meal ground from the nut, grow among the mountains. The rich pasture-lands in the plains and at the base of the mountains furnish food for large herds of cattle. Sheep and goats are raised on the higher slopes. The chief reason why Italy is so rich in agricultural products is that the Italian farmer seldom allows any of his land to lie idle.

Drying Macaroni

Fishing is another important industry. The Italians are so fond of fish that practically all the catch is sold in the home market. Sardines, oysters, and sponges are exported.

There is little mining done in Italy. Valuable deposits of iron are found in the island of Elba, and Sardinia produces iron, lead, and zinc. Sulphur is exported in large quantities from the volcanic districts of Sicily. The pure white marble of *Carrara* is famous all over the world for its beauty.

Lack of coal has hindered the development of manufactures in Italy. But the Italians are now making use of the water-power found almost everywhere, with the result that manufactures are increasing rapidly. Silk goods, manufactured from the raw material produced within the country, are one of the chief exports. Cotton and woollen goods, largely from imported raw materials, are also made, but mainly for home use. Wine is one of the most important products. Macaroni, cheese, olive-oil, straw hats, lace, and coral jewellery are other leading manufactures.

A panoramic View of Rome, Italy

Italy has a large foreign trade, particularly with Great Britain, France, the United States, South America, Africa, and the East. Much of this is carried by water from the excellent harbors along the coast, but at the same time the railways play a large part in transportation. No fewer than six railways enter Italy from France, Switzerland, and Austria. This enables the Italian manufacturers to procure easily raw materials not found within the borders of the country.

Most interesting of all Italian cities is the capital, *Rome*, on the *Tiber River*. The visitor cannot wander through its streets without being reminded at almost every step of the greatness of Ancient Rome. Ruins, such as those of the Colosseum, an amphitheatre which seated 50,000 people, and the Forum, the great public square of the Romans, help us to realize what the city must have been in the days when it was mistress of the world. In Rome, also, are many magnificent churches, the most famous being St. Peter's, celebrated for its immense dome. The Vatican, the official residence of the Pope, is near at hand.

Naples, the largest city in Italy, is situated on the beautiful *Bay of Naples* in the midst of a densely populated region. It is the chief port of Italy. A few miles east of the city is Mount Vesuvius, nearly a mile in height and constantly active. At the base of the volcano lie buried the cities of *Pompeii* and *Herculaneum*, destroyed long ago by an overflow of lava. *Florence*, one of the cities most attractive to tourists, is noted for its olive groves, its churches, and its art galleries. It is also a manufacturing centre.

Milan and *Turin* are important cities of the Lombardy Plain. The former is celebrated for its cathedral, one of the finest specimens of architecture in the world. *Pisa* is famed for its Leaning Tower. *Genoa*, on the gulf of that name, is noted for its shipping and its

A Street in Venice

commercial activities. At *Bologna* is the oldest university in Europe. *Trieste*, on the north-eastern side of the Adriatic, is an important seaport. It has a large trade with the East. *Palermo, Messina*, and *Syracuse* are the leading cities on the island of Sicily.

The most curious of all the Italian cities is *Venice*, built on more than one hundred islands in the Adriatic, about two and a half miles from the mainland. There are about 150 canals in the city and over 400 bridges. The people move about in boats, known in Venice as gondolas. The whole appearance of the place is strikingly beautiful. There are many magnificent palaces and churches, among the latter being the famous church of St. Mark.

Helps.—Show the effect of the Alps and the Apennines on the climate. Account for the fertility of the Lombardy Plain. Describe it. What use is made of the mountain streams in the north? Is irrigation much used? How is it that Italy can produce rice and silk? Of what importance is grape-growing? Are the Italians good farmers? What are the chief products? Has Italy a large foreign trade? Why? What is the effect of the length of the coast-line on the industries? What is the importance of Sicily and of Sardinia? Why is Italy such a favorite tourist resort? Find out all you can about Rome; Venice; Naples; Pompeii and Herculaneum. Account for the location of three other leading cities. Are her colonies an advantage to Italy?

YUGOSLAVIA

Before the close of the Great War, the peoples of Slavonic origin inhabiting the western part of the Balkan region joined together to form Yugoslavia, or, as it is officially called, the *Kingdom of the Serbs, Croats, and Slovenes*. These people speak various dialects, but they are sufficiently alike in language, customs, and traditions to make up a united kingdom. The area of the country is equal to twice that of our Maritime provinces, with a population a third larger than that of Canada. The Yugoslavians are a thrifty, hard-working people, fond of bright-colored costumes, music, and festive gatherings. Their national costume is very picturesque.

The surface in the western part is a tangle of mountains. The mountain valleys are very fertile. In the eastern part the country consists of the plain of the Danube and its tributary the *Drave*. The coast-line on the Adriatic Sea has no good harbors, as the mountains follow the coast and run down almost to the sea. This lack of harbors, however, is made up for by the proximity of *Fiume*, to which railways run from the interior of Yugoslavia. The climate is continental, with warm summers and cold winters. The south-west winds from the Mediterranean provide plenty of moisture during the summer months.

Agriculture is the principal occupation of the people. In the western part, wheat, barley, oats, and rye are the most important crops, while in the eastern and southern districts, figs, grapes, plums, olives, and tobacco are grown. Cattle and sheep are pastured on the mountain-slopes in summer, and, as in Norway, are brought back to the valleys for the winter.

In the forest the oak and the beech flourish, and on the nuts from these trees large droves of hogs are fattened. These forests have been carefully preserved and furnish lumber in abundance for the neighboring countries. Some minerals are found, but the mines as yet have been little developed. Woollens, carpets, sugar, wine, flour, and leather goods are the principal manufactures. The country has numerous railways. The Danube is an important trade-route.

Belgrade, the capital and chief commercial city, is situated on the south bank of the Danube. *Monastir*, in the southern part, is the only other city of any importance.

Helps.—Of what nationality are the Yugoslavians? Describe the surface. Of what advantage is the Danube? the Adriatic? What is the chief industry? Why? What is the importance of the forests? Account for the location of Belgrade.

ALBANIA

The kingdom of Albania, a small country on the Adriatic Sea south of Yugoslavia, has an area about four-fifths that of Nova Scotia and a population of a little more than 800,000. The Albanians, "people of the snow-land," are the most ancient people in south-eastern Europe, and their origin is shrouded in mystery. They call themselves *Skipetari*, or mountaineers, and are distinguished for their passionate love of country and for their refusal to mix with other races. About two-thirds of the population is Mohammedan, and about one-third is Christian.

Albania is swampy and unhealthy along the coast, but very mountainous inland. The larger number of the people are shepherds and cattle-breeders. The chief products traded in are olive-oil, wool, tobacco, and valonia—an extract made from oak trees for tanning purposes. There are twenty miles of railway, but products are generally carried on mules or donkeys. *Tirana*, the capital, is twenty miles east of *Durazzo*, the main seaport. *Scutari* is the largest city.

Helps.—What is the importance of Albania in Europe? What is the character of its people? Why is the country not more progressive?

BULGARIA

The kingdom of Bulgaria has less than half the area and population of its neighbor, Yugoslavia. Three-quarters of the inhabitants are Slavs, the remainder being Turks, Armenians, Greeks, Gypsies, and other foreigners. The people are sober and industrious, but when aroused they are very fierce fighters.

Photo from Ewing Galloway, N.Y.

Ploughing in Bulgaria

Through the country run the Balkan Mountains. The surface both to the north and to the south of the mountains is hilly, with extensive forests. The climate is much like that of Yugoslavia. South of the Balkans it is very mild. In this part, tobacco, rice, grapes, plums, sugar-beets, and mulberry trees are cultivated. The gardens of the southern district yield millions of roses, from which is made the perfume known as attar of roses.

The majority of the people are farmers or herdsmen. Wheat and corn are the principal grains. Cattle, sheep, hogs, and goats are raised. The forests give employment to large numbers of lumbermen. Some coal and iron are mined, and there are a few cotton and woollen factories. The railway from Vienna to *Constantinople* passes through Bulgaria, thus giving trade connection with both the east and the west.

The principal cities are *Sofia*, the capital, situated on the Vienna-Constantinople railway, and *Philippopolis* on the *Maritza River*. The latter is a busy industrial and commercial centre. *Varna* is the chief seaport on the Black Sea.

Helps.—Describe the surface. What is the effect of the Balkans on the climate? Account for the difference in products north and south of the mountains. What are the chief industries? Why? Account for the location of the chief cities.

GREECE

The republic of Greece is about twice as large as New Brunswick, with a population almost twice that of Ontario. The Greeks have always been sailors and traders, frugal, energetic, and industrious.

The surface is very mountainous, with fertile valleys and few rivers. The coast-line is irregular, and numerous bays run into the land. The *Gulf of Corinth* almost cuts off the tip of the peninsula proper, the isthmus being only a few miles wide. A ship-canal has been constructed through this isthmus. Off the west coast are the *Ionian Islands*, while in the Aegean Sea are a multitude of small islands. The climate is always mild, but very hot and dry during the summer months.

Only about a fifth of the land surface of Greece is suitable for agriculture. Wheat, olives, grapes, figs, and lemons are large crops. Rice is grown in *Macedonia*. The mulberry tree flourishes. Small, seedless grapes, which when dried are known as currants, are grown, especially in the Ionian

Islands. Iron, lead, zinc, and copper are mined. Fishing is an important industry. There are few factories.

Greece has an extensive shipping trade, not only with her own islands and with other Mediterranean countries, but also with Great Britain and with North and South America.

Athens, the capital, is built about a small hill in the midst of a plain surrounded by mountains except towards the sea. Modern Athens is beautifully planned, with boulevards, trees, and open spaces. It is one of the most attractive of the Mediterranean cities. The ruins of the ancient city are of intense interest. The beautiful temple known as the Parthenon, remarkably well preserved, still crowns the Acropolis, the ancient citadel of Athens. As Athens is four miles from the sea, its trade is carried on through *Piraeus*, an important commercial city. These two cities are the chief manufacturing districts of Greece, and the output of cottons, silks, and leather goods is large. *Salonica*, at the head of the gulf of that name, has a valuable shipping trade and is the terminus of a railway from Vienna.

Photo from Ewing Galloway, N.Y.

The Harbor of Constantinople

The island of *Crete*, which lies in the Aegean Sea, belongs to Greece. The principal products are olive-oil, wine, raisins, and almonds. *Candia*, situated on a small harbor on the north coast, is the chief town of Crete.

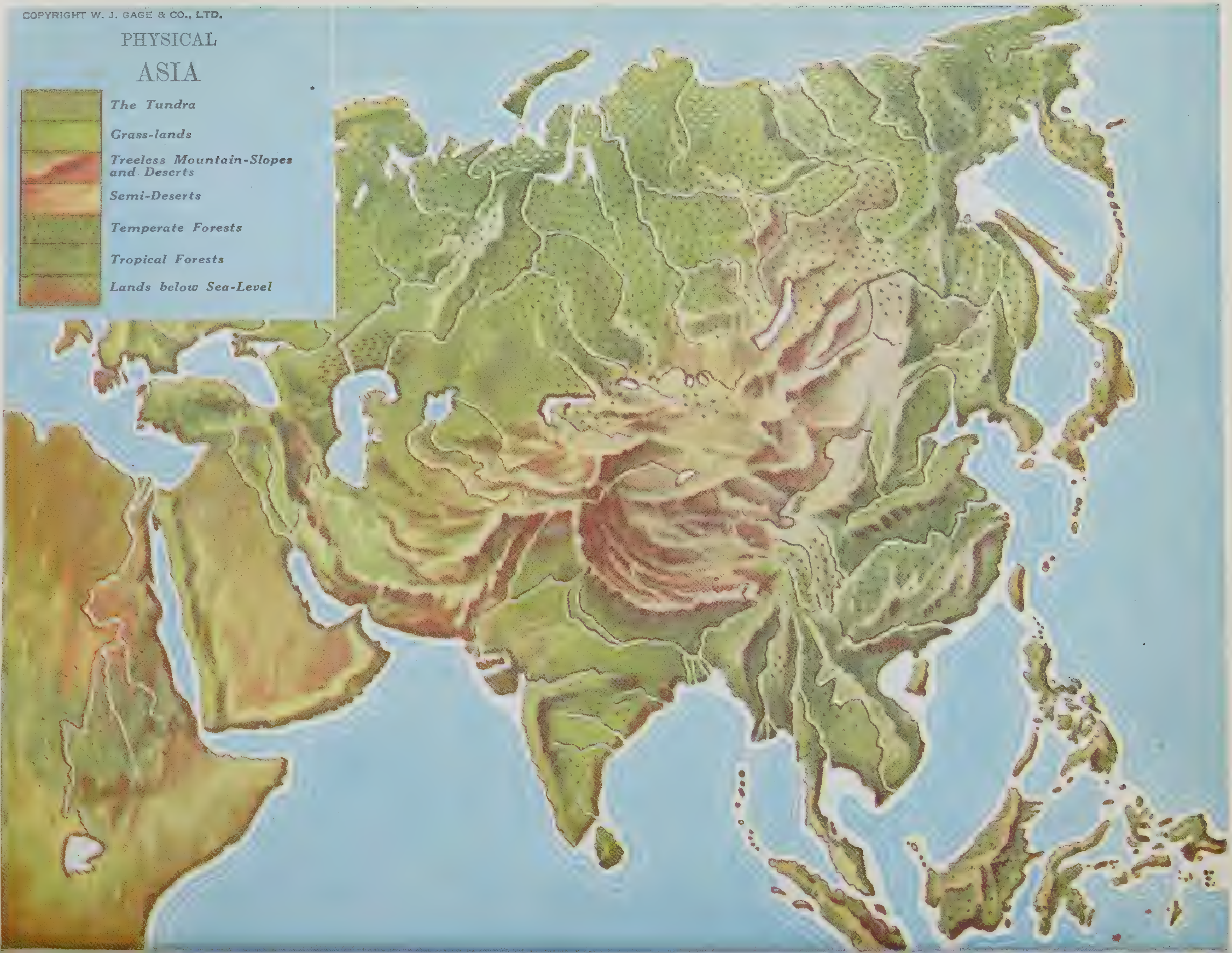
Helps.—Account for the mild climate of Greece. What effect has the coast-line on the industries and on the people? What effect has the mountainous surface? Why has Greece a large shipping trade? What are the leading products? Describe Athens. Find out all you can about the Parthenon and the Acropolis of Athens. Locate the other important cities. What is the character of the people? Why is Crete of importance to Greece?

A Vineyard in Greece—Gathering Grapes

TURKEY

Turkey in Europe now forms a part of the Republic of Turkey, the capital of which is *Angora* in Asia Minor. The surface is mostly mountainous, but there is a great deal of excellent agricultural land in the valleys and on the slopes of the hills and mountains. The climate is mild and healthful, but the summers are hot and dry. Grapes, plums, olives, almonds, figs, tobacco, and the cereals of the Temperate Zone are extensively grown. Silk is one of the most valuable exports of Turkey.

Constantinople is one of the most famous cities of Europe. It was founded by the Greeks 700 years before Christ. It is picturesquely situated on the Bosporus and the Sea of Marmora. Seen from a distance,



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PHYSICAL

ASIA

it is, with the exception of Naples, the most beautiful city in Europe. It is, however, a very dirty place, with large slum districts. The Mosque of St. Sophia is a magnificent edifice. The city, which was formerly the capital of the Turkish Empire, has a large foreign population. *Adrianople*, on the Maritza River, about 137 miles from Constantinople, is a city of considerable commercial importance.

Helps.—Describe the Turkish territory in Europe. What is its extent? To what race do the Turks belong? What are their chief characteristics? Describe the surface of the country. What are the chief occupations of the people? What is the importance of the Dardanelles, the Sea of Marmora, the Bosporus, and the Black Sea? Where is Constantinople located? Describe the city.

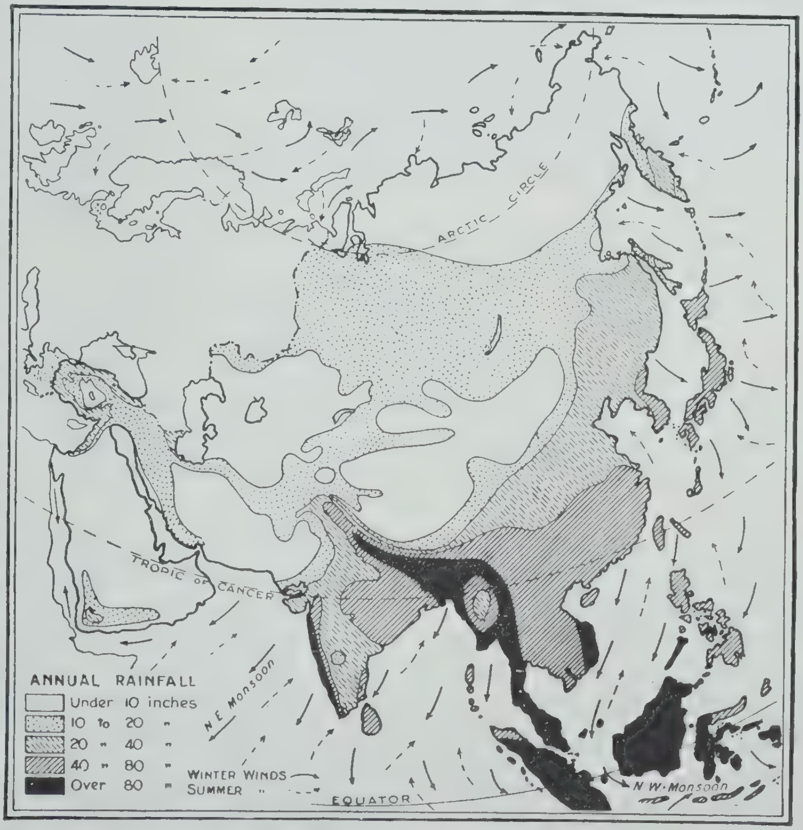
THE CONTINENT OF ASIA

THE CONTINENT AS A WHOLE

Map Questions.—What ocean is between Asia and North America? What strait separates these continents? What ocean is north of Asia? south of Asia? What continents touch Asia on the west? What two seas are between Asia and Europe? Name one sea between Asia and Africa. What neck of land separates the Mediterranean from the Red Sea? What two continents does it join?

Name five seas upon the east coast. What peninsula separates the *Sea of Okhotsk* from *Bering Sea?* What islands almost enclose the *Sea of Japan?* the *China Sea?* What peninsula separates the *Yellow Sea* from the Sea of Japan? What peninsula of Asia extends farthest south? Name the group of large islands close to it. Name a bay, a sea, and two gulfs on the south coast of Asia. Name three large rivers flowing northward into the Arctic Ocean, and three into the Pacific Ocean. What large river empties into the *Bay of Bengal?* into the *Arabian Sea?*

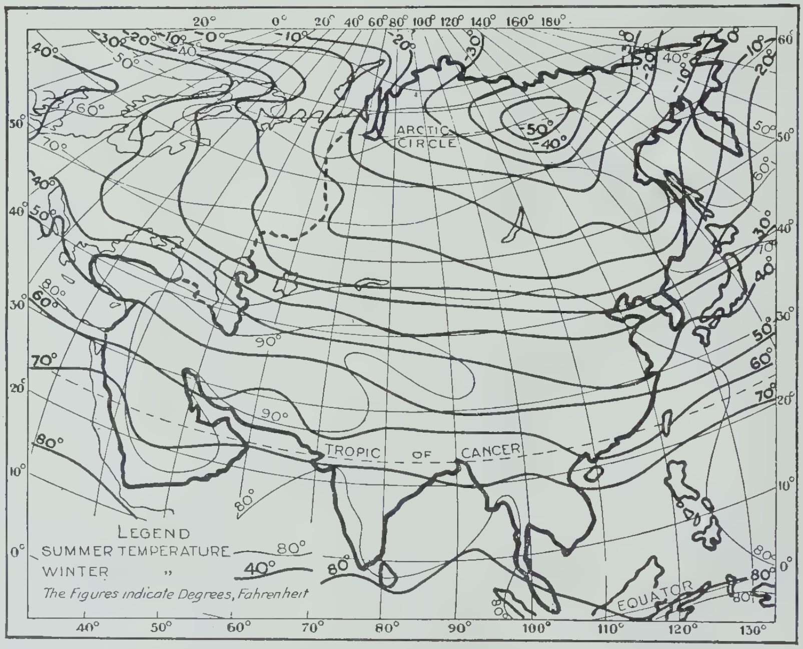
Where is the central point at which the mountain ranges of Asia meet? In what directions do the mountain ranges radiate from the *Pamirs?* Where is the highest land in Asia? In what zones is Asia? In what zone is the greater part of the continent? What coast is in the North Frigid Zone? What coast is largely in the Torrid Zone? Where is the warmest part of Asia? the coldest? Locate the various countries of Asia. Note the boundaries of each. Compare them in size.



Rainfall and Wind Map of Asia

Position and Extent. — Asia is more than twice as large as North America and contains about one-third of the land area of the world, that is, about 17,000,000 square miles. Its northern coast lies within the Arctic Circle, while its southern extremity is within ninety miles of the equator. The extreme width of the continent is about 6,000 miles, that is, almost one-quarter of the distance around the earth on the line of the equator. The population is estimated at about 900,000,000, almost four and a half times as many people as are in North and South America together.

Coast-Line.—The coast-line of Asia is irregular. In the west is the peninsula of *Asia Minor*, jutting out between the Black Sea, with its western extensions, and the Mediterranean. On the south there are three peninsulas: *Arabia*, *India*, and the *Malay Peninsula*. Notice the *Red Sea* and the *Gulf of Aden* lying between Arabia and Africa, the *Arabian Sea* between Arabia and India, the *Persian Gulf* between Arabia and Persia, and the *Bay of Bengal* between India and the Malay Peninsula. On the east coast there are also three large peninsulas: *Indo-China*, *Chösen*, and *Kamchatka*.



Temperature Map of Asia

The east coast is fringed with islands, which form an almost continuous chain from the tip of Kamchatka down to the Malay Peninsula. The islands as far south as *Formosa* form the *Japanese Empire*. Then come the *Philippines*, which belong to the United States. Clustered between Australia and Indo-China lie the *East Indies*, famous for their spices. Between this chain of islands and the coast are several well-defined gulfs and seas: the *Gulf of Siam*, the *China Sea*, the *Yellow Sea*, the *Sea of Japan*, and the *Sea of Okhotsk*.

Northern Asia.—The whole northern part of the continent is separated from the rest by the Asiatic portion of the main axis of Eurasia. This dividing line from the Caucasus Mountains to *Bering Sea* may easily be traced on the map. The entire section is a land of vast plains, broken in the eastern part by low mountains and plateaus. It contains the countries known as *Siberia* and *Turkestan*.

As has been said, the southern portion of the Asiatic plain lying between the Caspian Sea and the mountains forms an area of interior drainage. The southern part of the basin is a desert, since the high mountains to the south and east prevent rain-bearing winds from reaching it. The valleys of streams which rise in the mountains and flow northward into the basin are the only fertile sections of this region. Most of these streams are soon lost in the sand, but towards the east they are larger and carry a greater volume of water, because the mountains in this region are very high and condense more moisture than those farther to the south. The two largest are the *Amu* and the *Syr-Daria*, which both flow into the *Aral Sea*. In the valleys of these rivers are the chief settlements of Turkestan.

North of Lake Aral the ground rises gently to form the northern rim of the basin. The top of the rim forms a divide between this area of interior drainage and the vast plains which slope gently towards the Arctic Ocean. This belt of higher land is known as the *Kirghis Steppe*. There the land is not quite so parched as farther south and is covered with grass. The people of the steppe are, therefore, nomads, who wander in search of pasture for their herds of camels, cattle, and horses, and for their flocks of sheep and goats. The people of the steppe and of the desert belong to the Mongolian race.

North of the steppe is a wide belt of forested land, extending right across Northern Asia in a broad band about 1,000 miles wide. The southern edge of this vast forest is fairly open, and the land is rich and well suited for farming. Between the forest belt and the Arctic Ocean is the tundra, which very much resembles the tundra of our own continent.

The rivers of the northern plains are very large. The three greatest are the *Ob*, the *Yenesei*, and the *Lena*. Steam-boats ply on them during the summer. They are of comparatively little use for commerce, however, for they all flow into the Arctic Ocean, which is unnavigable for a great part of the year because of ice.

South-Western Asia.—It has already been said that a line of mountains runs eastward across the continent from the Caucasus to the Pamirs. Another range leaves the Pamirs and runs southward. These are the *Sulaiman Mountains*. The corner of Asia cut off from the rest of the continent by these two ranges of mountains we may call *South-western Asia.*

South-western Asia is a land of plateaus, rimmed about by lofty mountains. There are three main tablelands. One, extending from the Sulaiman and *Hindu Kush Mountains* to the Persian Gulf, is called the *Plateau of Iran.* The country of Persia covers almost its whole extent. The countries of *Afghanistan* and *Baluchistan* touch its eastern border. The second is the peninsula of Arabia. These two tablelands are separated by the Persian Gulf and the long plain through which flow the *Tigris* and the *Euphrates Rivers.* The country of *Iraq* occupies this plain. Asia Minor is the third great plateau. It is separated from the northern part of the Plateau of Iran by a belt of higher, mountainous country called the *Armenian Plateau.* *Turkey* is the chief country of Asia Minor, the other important divisions being *Syria* and *Palestine.*

Practically the whole extent of South-western Asia suffers from an insufficient rainfall. It lies in the track of the east winds and cannot derive moisture from these dry winds. The Mediterranean coast lies far enough north to come within the range of the west winds during the winter, and in that season receives a fair rainfall. The rainfall is copious at the coast, but, owing to the high coast ranges which condense most of the moisture out of the winds, decreases rapidly inland. The southern part of Arabia, however, enjoys a fair rainfall from June to September.

Photo from Ewing Galloway, N.Y.

A Village Scene in India

The Plateaus of Asia Minor and of Iran contain many basins, with a swamp or salty lake in each. *Lakes Van* and *Uramia* are two of the largest lakes lying in such basins.

The people of South-western Asia are mainly Caucasian, allied in race to ourselves. The majority of the people are either farmers or nomads. The fertile lands of the coast and of the river valleys and the oases of the interior are used for farms, on which barley, wheat, millet, and fruit of all kinds are grown. In Southern Arabia the date-palm furnishes much of the food used by the Arabs. The mountain-slopes and dry plains grow sufficient grass for scattered flocks of sheep. Camels and some fine horses are raised in Arabia.

Most of the people of this part of Asia are Mohammedans. They believe that a man named *Mohammed*, born in Arabia about 1,300 years ago, was inspired by God to reveal a true religion to man. *Mecca*, the city in which Mohammed was born, is their holy city. Many Mohammedans make a pilgrimage to Mecca, for they believe that this ensures their reaching paradise after death. Every Mohammedan turns his face towards Mecca when he prays. Mohammed taught that there was but one true God and that Mohammed was his Prophet. His teachings are contained in a book called the *Koran*, which is the sacred book of all Mohammedans. Mohammedanism spread very rapidly over Western Asia and Northern Africa, and to-day one out of every seven persons in the world is a follower of the Prophet.

Arab Priests

Southern Asia.—The region south of the *Himalayas* and east of the Sulaiman range, is called *Southern Asia*. It contains the countries known as India, *Siam*, and *Indo-China*. Much of this part of Asia lies within the Torrid Zone, and the rest is so close to it that the climate is warm everywhere, except on the high mountains.

In nearly all parts of Southern Asia there is abundant rain, brought by the winds from the ocean. The only large area in which there is deficient rainfall is North-west India. This district lies so far north that the ocean winds blow less regularly there. There, too, there are no high mountains near the coast to condense the water-vapor brought by the wind.

Southern Asia is chiefly mountainous, with narrow plains around the coast. It contains two very large plains, one forming the valley of the *Indus River*, the other forming the the valley of the *Ganges*. The plain of the Indus is the dry section of India, and farming there depends largely upon irrigation. The plain of the Ganges receives an abundant rainfall, due to the fact that it lies close to the base of the great Himalayas. This plain is one of the most densely populated regions in the whole world. Southern India is an extensive plateau, called the *Deccan*. Indo-China is mountainous, with the exception of narrow coastal plains and the plains of the river valleys.

The mountains are densely forested upon their lower slopes. The teak is the most valuable of tropical trees on account of its fine timber. There are also many jungles of bamboos, interlaced with a profusion of creepers. The vegetation of the whole section is very abundant, because the rainy and the hot season coincide. The countries watered by the ocean winds can grow much more food than the lands in which the summers are dry and the winters wet, as, for instance, is the case in Asia Minor. This is one reason why Southern Asia is able to maintain such an enormous number of people.

Animal life depends upon vegetation, and Southern Asia is very rich in both. There are many deer of various kinds, numerous herds of wild buffaloes, and many wild boars. Countless monkeys live in the tree-tops of the forest. Elephants are abundant in all the countries of Southern Asia, and the rhinoceros is found in Indo-China. The flesh-eaters are represented by the tiger, the panther, and the leopard. Jackals and vultures act as scavengers. Crocodiles infest the rivers. Snakes are particularly abundant, and many of them are poisonous. The most deadly of all the snakes is the cobra. Although Southern Asia is so densely populated, the people have never succeeded in killing off the dangerous animals which range their lands.

The people of Southern Asia are of many races. Most of the people of Northern India are of Caucasian origin, being descendants of invaders who swept into India from the west centuries ago. Farther south live the *Telugus* and the *Tamils*, who lived in the land long before the coming of the Caucasians. In the jungles of the interior of the Deccan are still many tribes of the savage hunters who were the original inhabitants of the country. In *Burma* the population is partly Caucasian and partly Mongolian. Farther south, there are many *Malays*, who came by sea from islands to the east to the peninsula which now bears their name, and many *Chinese*, who also came by sea from their own land farther north. The peninsula of Indo-China is inhabited mainly by tribes who belong to the Mongolian race.

A native House in the Malay Country

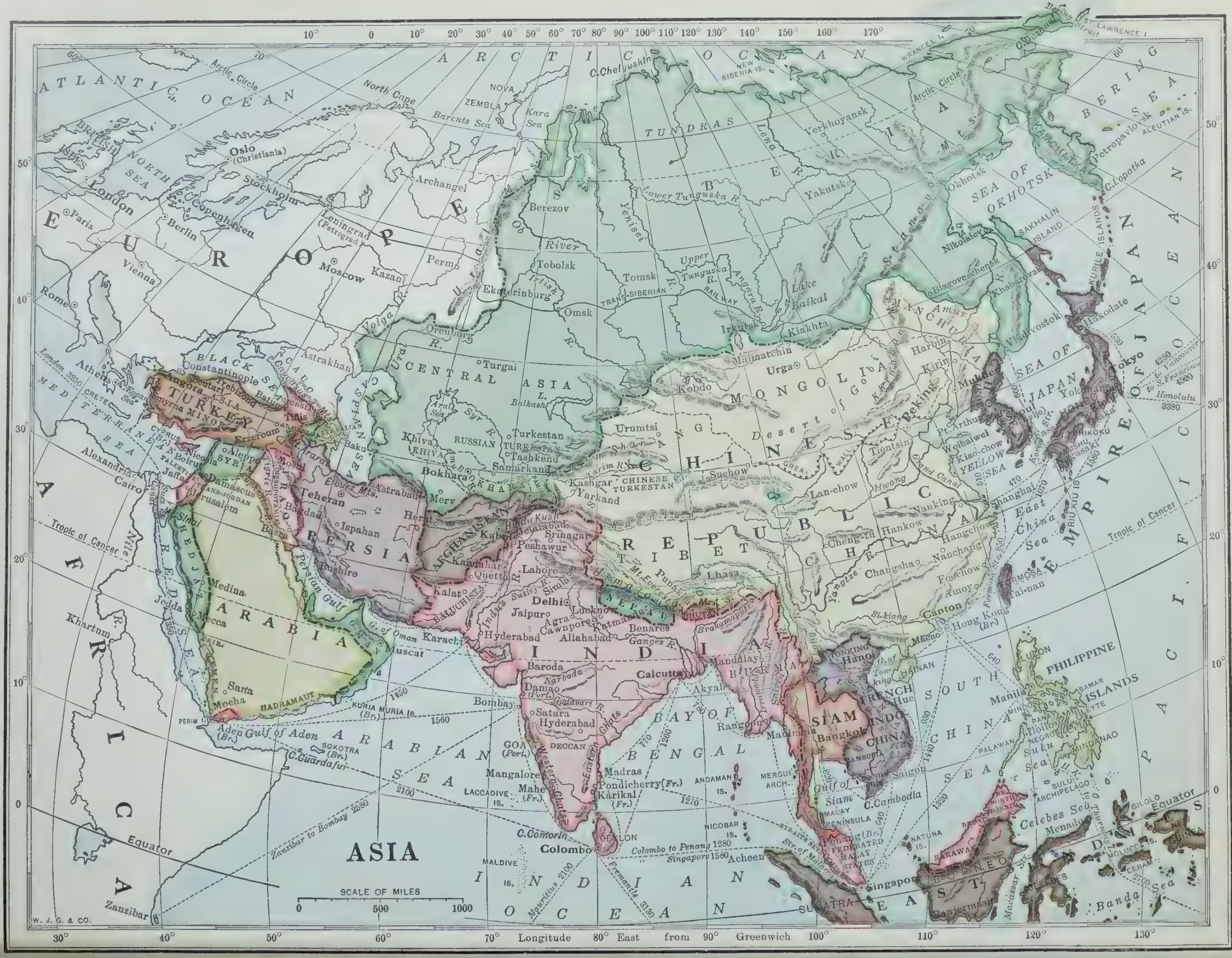
The religions of Southern Asia are as various as the people. Many of them are Mohammedans. The *Hindus*, one of the Caucasian races of Northern India, believe in many gods. They are divided into castes or classes, of which the *Brahmans* are the most holy. The *Parsees*, who came originally from Persia, worship the sun, which they consider to be the source of all life. There are many *Buddhists*. They believe that a man's soul passes, after the death of the body, into a new-born child or animal. Buddhism is a mild religion and teaches men to be kind, gentle, and forbearing.

Eastern Asia.—The fourth great subdivision of Asia comprises the region lying southeast of the *Thian Shan* and other ranges which extend from the Pamirs to Bering Sea. Eastern Asia almost coincides with the boundaries of the republic of China. A range of mountains called the *Great Khingan Mountains* parallels the east coast in the northern part of eastern Asia. These mountains and their southward continuation divide the section into two very different regions. The western part consists of plateaus running westward from the coast ranges to the Thian Shan and the Pamirs. The eastern section is called the *Pacific Slope*. It is a hilly country, containing, however, one great plain and many smaller ones.

Inner Asia, as the western section is called, is divided into three distinct areas. In the north is the cold *Mongolian Plateau*. That portion of Mongolia lying in the lee of the Khingan Mountains is a very large desert, called the *Desert of Gobi*. The rest of Inner Asia is divided by the *Kuen-Lun Mountains*, which stretch eastward from the Pamirs, about midway between the Thian Shan and the Himalayas. Between the Mongolian Plateau, the Thian Shan, and the Kuen-Lun Mountains lies a huge basin called *Sinkiang*. It is so dry that much of it is entirely desert.

Primitive Ploughing in Siam

Between the Kuen-Lun and the Himalayas is the lofty *Plateau of Tibet*. It lies from two to three miles above the sea. Therefore, the winters are very cold, and even during the summer frosts are not unusual. In the lower parts of the plateau, grass is found, and in a


ASIA

SCALE OF MILES
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W. J. G. & CO.
ARCTIC OCEAN
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
EUROPE
AFRICA
ARABIA
PERSIA
INDIA
TURKEY
AFGHANISTAN
BALUCHISTAN
SIBERIA
CENTRAL ASIA
RUSSIAN TURKESTAN
CHINESE TURKESTAN
MONGOLIA
MANCHURIA
TIBET
CHINESE REPUBLIC
EMPIRE OF JAPAN
SIAM
FRENCH INDO CHINA
BURMA
NEPAL
BHUTAN
PHILIPPINE ISLANDS
EAST INDIES
BORNEO
SUMATRA
CELEBES
NEW GUINEA
FORMOSA
CEYLON
FEDERATED MALAY STATES
SARAWAK
NORTH BORNEO
KAMCHATKA
SAKHALIN ISLAND
KURILE ISLANDS
ALEUTIAN IS.
NOVA ZEMBLA
NEW SIBERIA IS.
WRANGEL I.
ST. LAWRENCE I.
BRITISH ISLES
HADRAMAUT
HEDJAZ
YEMEN
OMAN
MESOPOTAMIA
SYRIA
PALESTINE
TRANS-JORDAN
ASIA MINOR
DECCAN
Bering Strait
SEA OF OKHOTSK
BERING SEA
SEA OF JAPAN
YELLOW SEA
East China Sea
SOUTH CHINA SEA
Sulu Sea
Celebes Sea
Banda Sea
ARABIAN SEA
BAY OF BENGAL
RED SEA
Persian Gulf
G. of Oman
Gulf of Aden
Gulf of Siam
G. of Tonking
Str. of Malacca
Macassar Str.
Formosa Str.
Korea Str.
CASPIAN SEA
BLACK SEA
MEDITERRANEAN SEA
Aegean Sea
Barents Sea
Kara Sea
NORTH SEA
Aral Sea
L. Balkash
Lake Baikal
TUNDRAS
Desert of Gobi
GREAT WALL
Grand Canal
TRANS-SIBERIAN RAILWAY
Ural Mts.
Caucasus Mts.
Elburz Mts.
Hindu Kush
Himalaya Mts.
Mt. Everest
Stanovoi Mts.
Western Ghats
Eastern Ghats
Pamir
Mt. Ararat
Mt. Sinai
Arctic Circle
Tropic of Cancer
Equator
Ob River
Irtish R.
Yenisei R.
Lena R.
Lower Tunguska R.
Upper Tunguska R.
Angara R.
Amur R.
Hwang Ho
Yangtze R.
Si-kiang
Brahmaputra R.
Ganges R.
Indus R.
Sutlej R.
Narbada R.
Godavari R.
Irrawaddy R.
Salween R.
Tigris R.
Euphrates R.
Syr R.
Amu R.
Ural R.
Volga R.
Tarim R.
Nile R.
C. Chelyuskin
C. Dezhnev
C. Lopatka
North Cape
C. Comorin
C. Guardafui
C. Cambodia
London
Paris
Berlin
Copenhagen
Oslo (Christiania)
Stockholm
Vienna
Rome
Athens
Leningrad (Petrograd)
Moscow
Archangel
Kazan
Perm
Orenburg
Astrakhan
Ekaterinburg
Tobolsk
Berezov
Omsk
Tomsk
Irkutsk
Kiakhta
Yakutsk
Verkhoyansk
Okhotsk
Nikolaiev
Blagoveschensk
Khabarovsk
Vladivostok
Petropavlovsk
Turgai
Khiva
Bokhara
Merv
Samarkand
Tashkend
Turkestan
Kashgar
Yarkand
Urumtsi
Kobdo
Uliassutai
Urga
Maimatchin
Harbin
Kirin
Mukden
Peking
Tientsin
Pt. Arthur
Weihaiwei
Kiao-chow
Seoul
Suchow
Lan-chow
Cheng-tu
Hankow
Nanking
Shanghai
Hangchow
Nanchang
Changsha
Foochow
Amoy
Canton
Hong Kong (Br.)
Macao
Lhasa
Hanoi
Hue
Saigon
Bangkok
Mandalay
Rangoon
Moulmein
Akyab
Calcutta
Benares
Katmandu
Patna
Allahabad
Lucknow
Cawnpore
Agra
Delhi
Jaipur
Simla
Lahore
Srinagar
Peshawar
Kabul
Jelalabad
Kandahar
Quetta
Kalat
Herat
Hyderabad
Karachi
Baroda
Bombay
Damao (Port.)
Satara
Goa (Port.)
Mangalore
Mahe (Fr.)
Madras
Pondicherry (Fr.)
Karikal (Fr.)
Colombo
Teheran
Ispahan
Astrabad
Bushire
Baku
Tiflis
Batum
Erzeroum
Trebizond
Constantinople
Scutari
Angora
Smyrna
Nicosia
Aleppo
Beirut
Damascus
Jaffa
Jerusalem
Mosul
Bagdad
Basra
Muscat
Medina
Mecca
Jedda
Sana
Mocha
Aden (Br.)
Perim
Cairo
Alexandria
Suez Canal
Khartum
Zanzibar
Tokyo
Yokohama
Osaka
Kioto
Nagasaki
Hakodate
Tai-nan
Manila
Singapore
Penang (Br.)
Acheen
Banjermasin
Menado
Luzon
Mindoro
Samar
Leyte
Panay
Negros
Mindanao
Palawan
Sulu Archipelago
Hainan
Hondo
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Kiushu
Yezo
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Ceram
Gilolo
Natuna Is.
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Andaman Is.
Nicobar Is.
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Cyprus (Br.)
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Malay Peninsula
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Azerbaijan
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Colombo to Penang 1280
Singapore 1580
Mauritius 2100
Fremantle 3130
to Honolulu 3380
to S. Francisco 4520
to Vancouver 4280
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few of the lowest valleys crops may be raised.

The most useful animal of the Tibetan Plateau is the yak. This is a big, clumsy-looking beast, something like an ox, with long, shaggy hair. The yak is very sure-footed and is valuable as a beast of burden in the mountains.

The Pacific Slope is very different from Inner Asia. The summer winds blowing from the Pacific bring a heavy rainfall. There are many navigable rivers. The two largest of these, the *Hwang* and the *Yangtse*, have built up a huge fertile plain along many miles of the coast. All these factors together make a land which can support many people. Nearly a third of all the people in the world live on the fruitful plains and valleys of Eastern Asia or on the fertile islands which fringe the coast.

The tea-bush is one of the most important cultivated plants of Eastern Asia. It is a low, spreading bush with dark green leaves, which flourishes in the rich, moist soil of China and Japan. The dried leaves of this plant are the *tea* of commerce. Silk, too, is produced in large quantities.

The people of Eastern Asia are *Mongolians.* They are divided into many races, including the *Japanese*, the *Chinese*, the *Koreans*, the *Siamese*, and others of less importance. All of these nations have the general characteristics of the Mongolian race, but their language, customs, and character differ widely. Most of the people of Eastern Asia are *Buddhists.* Some believe in *Taoism*, which teaches that there are all manner of evil spirits which man must fear and propitiate. Others follow the teachings of *Confucius*, a Chinese sage. This belief enjoins the worship of ancestors. Many of the people of China believe in all three of these religions.

A typical Tea-bush of Eastern Asia

Helps.—Compare Asia in size with the continents which you have so far studied. Locate on the map the great physical divisions. Compare these. Compare them with the physical divisions of North America. What are the principal natural resources of each? The principal industries? Compare the peoples living in the various physical divisions. To what races do these peoples belong? What are their religions? Compare them with the peoples of Europe. Why have Europe and America advanced commercially much more rapidly than the peoples of Asia? Compare the amount of non-productive land in Asia with that in Europe and in North America. Compare the animals of Asia generally with those of Europe.

THE COUNTRIES OF ASIA

A number of the most important countries of Asia form part of the British Empire. Among these are the *Indian Empire*, the islands of *Cyprus* and *Ceylon*, *Aden* with its adjacent islands, a number of islands in the Malay Archipelago, and *Palestine* and *Irak*, which are controlled by Great Britain under mandate from the League of Nations. These are all treated in the section dealing with the British Empire. *See page 252.*

CHINA

The republic of China, which occupies the central portion of Eastern Asia bordering on the Pacific Ocean, consists of five great provinces—*China, Tibet, Sinkiang, Mongolia,* and *Manchuria.* It is somewhat larger than the whole of Canada, and it has a population of 320,000,000, nearly all Mongolians.

China Proper occupies one-third of the surface of the republic and almost all the coast-line. It is divided into three great plains by two mountain chains which extend eastward from Tibet.

Part of the Great Wall of China

This great wall was built to keep out invaders from the north.

The northern plain is the most densely populated district in the world. This plain is drained by the Hwang River, which, in its course through the lowlands, frequently overflows its banks and brings disaster to the people. For this reason the river is called "China's Sorrow." The surface is covered by yellow soil and is so fertile that it produces heavy crops without the aid of fertilizers. The central plain is drained by the Yangtse River. This river is 3,500 miles in length and is the chief commercial highway. The soil is of a rich, red color and is very productive. The southern plain is drained by the *Si River* and its tributaries. The soil there is not quite so good as in the other two great plains.

The climate varies from a temperate in the north to a tropical in the southern region. All the south lies within the influence of the monsoons, and the rainfall is very heavy. Farther north the rainfall is less, but sufficient for agriculture. In late summer and early autumn the China Sea is visited by typhoons—fierce hurricanes which have their source in the East Indies. Raging along the coast and sweeping gigantic waves before them, they sometimes do great damage to the coastal plains.

Throughout the republic the tiller of the soil is held in honor next to the scholar. The people are skilful and industrious farmers and make use of all available ground. Irrigation is employed in the north and in the rice fields of the south. North of the Hwang River millet and barley are grown. The central zone, where the winters are milder, produces rice, wheat, tea, sugar-cane, and bamboo. There enough rice is grown to feed the entire population. The eastern section is famous for its silk and cotton.

The staple product is, of course, rice, and next in importance is silk. The mulberry tree is widely cultivated in the centre and the south, while in the north the silk-worms are fed on a species of oak. Tea is exported in immense quantities.

The country is singularly lacking in forest. There is not even sufficient wood to make coffins for the dead, and the most valued gift a son can make to his parents is a coffin. The mountains are exceedingly rich in minerals, but little prospecting has been permitted by the government. It is definitely known that this section of the republic has at least twenty times as much coal as there is at present in the British Isles. Iron and pottery clay are abundant.

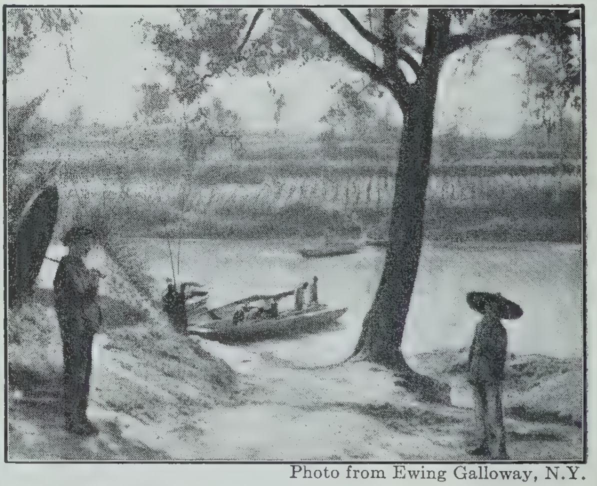


Photo from Ewing Galloway, N.Y.

Farm Landscape and River Ferry, Central China

Modern manufacturing has not been developed to any extent. As the Chinese fear that the introduction of machinery will deprive them of their work, they still continue to manufacture by hand.

Interior communication is poor, the only means of transportation being the waterways and a few bad roads. The building of railways, however, is being encouraged by the government. In late years foreign commerce has increased rapidly, and the republic now ranks third among the trading nations of Asia. Trade is carried on principally with Great Britain, Japan, and the United States.

Peking is the capital of the Chinese republic and contains the famous "Forbidden City," the home of the former emperors. *Tientsin* is the port of Peking. *Hankow,* on the Yangtse River, is the principal city in the interior. It has a large steel industry. *Shanghai* is an important port, with a beautiful harbor and large manufacturing interests. *Canton,* the chief city of the south, is a great commercial centre and has steamship connection with *Hong Kong.*

Tibet, the most elevated region in the world, is a mountainous plateau. The summers are short and hot, while the winters are very severe. In the valley of the *Brahmaputra River* and in the south, crops, chiefly barley, are raised with the aid of irrigation. The greatest wealth of the country comes from the large herds of sheep, goats, horses, and yaks. The last are used as beasts of burden. Minerals are found everywhere, but little mined. Cashmere wool is the chief export.

The capital of Tibet is *Lhassa.* The Grand Lama, as the ruler and chief priest of the land is called, lives there. Tibet has bound itself not to enter into relations with any foreign country without the consent of Great Britain. Chinese control over Tibet is more nominal than real.

Sinkiang, also known as *Chinese Turkestan,* lies to the north and west of Tibet. The surface is mainly an arid tableland, with fertile districts on the steppes and in some of the river valleys. In the arid sections are oases, which have been made more fertile by irrigation. Carpets, linens, cotton, and silks are manufactured, and much fine work in gold and silver is done by the natives. The total population is very small. The chief towns are *Kashgar* and *Yarkand.*

Mongolia lies between China and Siberia. The surface consists mainly of mountain ranges and the great Desert of Gobi. Part of the surface, however, is poor steppe-land, upon which the nomadic inhabitants pasture horses, sheep, and camels. The people are Buddhists and regard the capital of their country, *Urga,* as a holy city.

Courtesy of Canadian Pacific Railway

The Harbor of Canton

Manchuria lies to the east of Mongolia and to the south of Siberia. In the river valleys of the northern part of the country the soil is fertile, while in the southern section, though part of the surface is a salt desert, there is much good land. The leading industry is the cultivation of the soya-bean. Large crops of wheat, millet, rice, and fruits are grown. Many cattle are raised. The forests are filled with valuable timber, the rivers supply salmon, and the mountains are rich in coal, iron, gold, and silver, though little mining is done.

The majority of the people are *Chinese,* but the important ports of *Dairen* and *Port Arthur* belong to Japan. *Mukden,* the capital, is an important military centre on the Siberian Railway, with a large export and import trade. Its population is about 250,000.

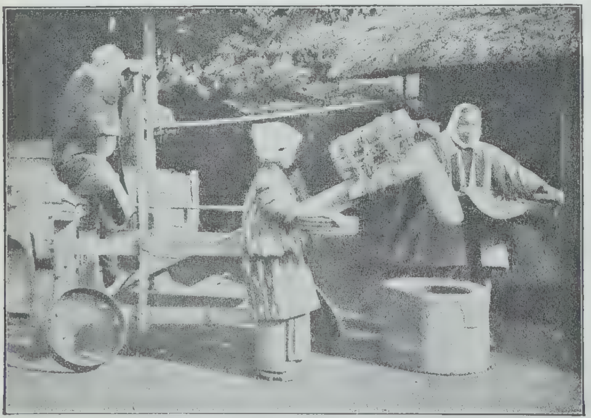
Helps.—Trace the boundaries of the five provinces of China. Compare their surfaces and climates. How does China manage to feed its enormous population? Why is the cultivation of the poppy not now so important? To what extent is irrigation used? What is the value of the rivers? How far are canals made use of? Why should China be a very important manufacturing country? Why are the Chinese opposed to the introduction of machinery? Why are the mines not more developed? What would be the effect if there were more railways? Account for the number of large cities. How was their location determined? Why are the great world powers so interested in China?

JAPAN

The Japanese Empire consists of five large and several hundred smaller islands, which extend along the east coast of Asia. The empire includes also the peninsula of *Korea*, which, when added to Japan some years ago, was re-named *Chösen*. The area of the entire empire is a little larger than that of Alberta, and the population is about 83,000,000, over nine times that of Canada.

Sorting Tea for Export, Japan

The people of Japan are largely Mongolians. They are a very artistic people, who take delight in producing what is beautiful. They love their land and use their skill as gardeners to make it still more beautiful. They are exceedingly industrious and skilful excelling especially in work requiring delicacy of touch and handling.



A Machine for pounding Rice

Though they retain many of their picturesque customs, the Japanese are the most intelligent and enterprising of the eastern peoples. The young men are sent to Europe or to America to be educated and to bring back with them a knowledge of civilization other than their own. Japan now has railways, telegraphs, telephones, factories, schools, and universities.

The surface of all the islands is very mountainous. There are few navigable rivers, and the rugged nature of the country makes the construction of railways both difficult and costly. Many of the towns and villages in the interior can be reached from the coast only by vehicles drawn by men. The mountains are volcanic in their origin, and many of them are still active. Earthquakes are so frequent that the Japanese are compelled to build their houses of very flimsy construction in order to protect themselves against shock. Between the mountain ranges there are many fertile lowlands. On these and on the sides of the mountains agriculture is carried on. Only about one-sixth of the surface of the country can be used for farming.

The climate of Japan varies from tropical heat in the south to extreme cold in the north. In general, however, all over the islands the climate is mild. The warm *Japanese Current* modifies the temperature, and owing to the surrounding ocean, weather changes are neither sudden nor extreme. The rainfall is heavy. In the northern islands snow lies on the ground until May.

The population of Japan is very dense, so that every available bit of land is cultivated in order to provide food for the people. Few animals are kept, as these would consume too much food. In many places the mountain-slopes are terraced in order to make room for more crops. In the south the chief products are rice, tea, tobacco, flax, beans, and peas. Rice is the staple food of the people. In the north the cereals of the Temperate Zone are grown. Fruits grow plentifully, and the mulberry tree is widely cultivated. Japan produces much more silk than any other country in the world.

The natural resources of the islands are very great. The forests supply many valuable woods. Bamboo is used, when it is young, for food, and in a later stage for the manufacture of furniture and paper. The seas abound in fish, which are used as a steady diet by the Japanese. Over 3,000,000 men are engaged in the fisheries. The chief minerals are coal and copper. There are many petroleum wells.

In some industries Japan has adopted western methods of manufacture. Silk and cotton products are now made by the factory system. The making of paper, of machinery, and of tools are important industries. The Japanese continue, however, to produce articles peculiar to their own civilization, and their mattings and porcelain, their brass, straw, ivory, and lacquer-ware have never been equalled in any other part of the world.

Ainus
The people of this tribe are descendants of the original inhabitants of Japan.

Tokyo, the capital, is a beautiful and progressive city, with modern street railways, hotels, and stores. Both the Imperial Palace and the University of Japan are in Tokyo. *Yokohama*, the seaport of Tokyo, is a very busy commercial and shipping centre. It is a port of call for Pacific liners, including the passenger boats and freighters that run from Vancouver to Japan and China. *Osaka*, the largest city in the empire, has many cotton factories. It has, however, a very poor harbor, so that its trade is conducted largely through *Kobe*, a neighboring seaport. Other centres are *Nagoya*, a seaport and industrial city, and *Kyoto*, the ancient capital of Japan, which has large manufactures and is a railway centre.

Chösen, formerly called *Korea*, is a mountainous land. In summer the rainfall is heavy. The winters are cold. The people resemble the Chinese in dress and customs. They are strong and fine-looking, but unprogressive. Agriculture is the chief industry, the principal crops being wheat, barley, oats, and beans in the north, and rice, tobacco, and cotton in the warmer lands of the south. Chösen has valuable forests and large deposits of coal, iron, and copper. Some stock is raised, and hides are among the exports of the country. The capital, *Keijo*, formerly *Seoul*, lies in the interior. *Fusan*, on the south-east coast, is the principal seaport.

Formosa is a very mountainous island about two-thirds the size of Nova Scotia. It is covered with dense forest, in which live many savage tribes. On the coastal lowlands rice and sugar-cane are raised, but the most important crop is tea. Practically all the world's supply of camphor comes from the forests of Formosa.

Helps.—Describe the Japanese islands. Compare the climate with that of the mainland. What is the importance of agriculture? Why is Japan rapidly changing from an agricultural to a manufacturing nation? From where does Japan draw the raw materials required in her manufactures? Of what importance is Chösen to Japan? Is it necessary that Japan should increase her territory? Why is Japan interested in China? Why has Japan advanced more rapidly than China? Why is Japan recognized as a great world power? What are the chief exports? Why is Japan now building her houses and office buildings much like those in Canada and the United States?

A Street in a Japanese City

THE LESSER COUNTRIES

THE SOVIET REPUBLICS

Lying across the entire northern part of the continent from the Caspian Sea to the Pacific Ocean is an immense area, formerly known as *Siberia* and *Turkestan.* This section of Asia is divided into a large number of small states, republican in their form of government, and all belonging to the Union of Soviet Socialist Republics, which have their headquarters at Moscow in Europe. *See page 164.* The area of this territory is estimated at almost 5,000,000 square miles, with a population of about 17,000,000.

The surface of the northern and eastern section, the former Siberia, is very much like that of Canada and has already been described. *Lake Baikal,* in the southern section, is nearly twice as large as Lake Superior. It has extensive herring and sturgeon fisheries. The climate is very similar to that of the tundra, forest, and prairie sections of our own Dominion.

Siberian Peasants

The original peoples of Siberia are fast disappearing, their place being taken for the most part by Russians.

Very little of the land is under cultivation. The principal crops are wheat, oats, and rye. There are many districts entirely given up to the raising of cattle, horses, goats, and sheep. Butter and cheese are both exported in large quantities.

The immense forest areas have at present very little commercial value, on account of the lack of railways. The forests, however, are the home of large numbers of fur-bearing animals, whose skins are a source of wealth to the people. The mineral wealth of the country is also great, but again the lack of railways has hindered the development of the mines. The most important minerals are gold, silver, copper, iron, zinc, and graphite. The manufactures are few, the chief being flour-milling and the smelting of minerals.

There are but few cities or towns of any great importance. The principal cities—*Omsk, Tomsk, Irkutsk,* and *Vladivostok*—are all on the Trans-Siberian Railway, which crosses the country from east to west. Omsk lies in the midst of a rich agricultural country, while Tomsk and Irkutsk are in the mining districts. Vladivostok is the eastern terminus of the Siberian Railway. It has an excellent harbor, which, however, is frozen for three months of the year. The city has many factories and machine shops.

The south-western part of the country bordering on the Caspian Sea differs greatly both in surface and in people from the more northerly section. Two of the chief Republics are *Khiva* and *Bokhara.*

Most of the inhabitants of this arid country are nomads, pasturing flocks of sheep and goats on the steppes. In the river valleys, cotton, silk, tobacco, rice, sugar-cane, fruits, and millet are cultivated with the help of irrigation. Khiva and Bokhara are famous for their beautiful rugs, woven by hand from the wool and goat hair which are produced in the country.

Tashkend, Samarkand, Bokhara, Khiva, and *Merv* are the principal places. Bokhara is a famous Mohammedan city. In it are hundreds of mosques and Mohammedan institutions of learning.

Lying to the south of the Caucasus Mountains, between the Black and Caspian Seas, is a large district known as *Transcaucasia.* It is separated from the other Soviet Republics of Asia by Persia. It contains three states—*Azerbaijan, Armenia,* and *Georgia.* The area of the three republics is 75,000 square miles, with a population of about six millions.

Running across the country from east to west are the lofty Caucasus Mountains. The vegetation on the north side of the mountains is scanty, while on the southern side there are magnificent forests and large stretches of fertile land, where grapes, figs, chestnuts, cotton, and corn are cultivated. The chief wealth of the country is drawn from its oil fields, which rank among the most productive in the world.

The centre of the oil industry is at *Baku* on the Caspian Sea. A railway connects Baku with *Tiflis*, the most important commercial city and the capital of the district, and thence with *Batum* on the Black Sea.

The Turkish Republic.— The republic of Turkey includes the whole peninsula of Asia Minor and the territory bounded by *Caucasia*, *Persia*, Irak, and the Mediterranean and Aegan Seas. The *Ottoman Turks*, the descendants of Mongolian tribes who invaded Asia Minor in the thirteenth century, form the ruling class. They are fanatical Mohammedans and have always been noted for their cruel persecution of Christian races under their control.

Making Butter in a Goat-skin Churn, Turkey

The surface is very rugged, but along the entire coast are low, narrow plains, some of extraordinary fertility. The interior is an elevated plateau, with mountains on the north and the south, and low, parallel ranges between. The coast on the Black and Aegean Seas is generally bold and precipitous, while along the Sea of Marmora it is flat and low. Along the Mediterranean there are many bays and inlets. The climate varies with the elevation. In the interior the winters are cold. The regions along the sea-coast have long been celebrated for their warm and genial climate.

The natural resources of Asiatic Turkey are great, but the indolent Turks have in the past neglected to take advantage of them and have even refused to allow them to be developed. There are large timber areas among the mountains. Many minerals, such as copper and manganese, are found. Petroleum and rock-salt are valuable products. In many sections the soil is very rich, so that tropical fruits, tobacco, cotton, olives, raisins, and figs are profitable crops. In some of the drier districts irrigation is necessary. Among the mountains and on the plateaus sheep and goats are raised, particularly the Angora goat, from whose wool a valuable cloth is made. Sponges are obtained from the Aegean Sea.

Smyrna, on the Aegean Sea, and *Trebizond*, on the Black Sea, are the two most important ports of Asiatic Turkey. *Angora* is the capital. There are few large towns in the interior.

Syria.— Lying along the eastern end of the Mediterranean, between Asia Minor and Palestine, is Syria. The country formerly belonged to Turkey, but is now governed by France under mandate from the League of Nations. It is a little larger than our Maritime Provinces, with a population of 3,000,000. Most of the people are Arabs.

Syria is a tableland, with parallel mountain ranges running from north to south near the coast. East of the mountains the surface slopes towards the *Syrian Desert*. The rivers are small, and most of them are lost in the desert sands. The summers are long, hot, and dry, the winter being the rainy season. Irrigation is necessary over the greater part of the country.

Along the coast and in the valleys are cultivated crops similar to those of Asiatic Turkey. Many of the Syrians are herdsmen, raising sheep and goats, and in the desert regions, camels. Sponges are an important article of export. Leather, woollen, and silk goods, and jewellery are made by skilled craftsmen.

The principal seaport of Syria is *Beirut*, which is connected by rail with *Damascus*, the chief city. Damascus is also the terminus of one of the great overland camel routes to Persia.

Arabia.—Arabia, the country of the Arabs, is about one-quarter of the size of Canada. The population is small for the vast extent of country, being only about seven millions. In addition to the large area under no organized government, Arabia contains the three kingdoms of *Hejaz*, *Nejd*, and *Oman*.

Passenger Transport by Camel

The camel is used almost everywhere in the East as a beast of burden.

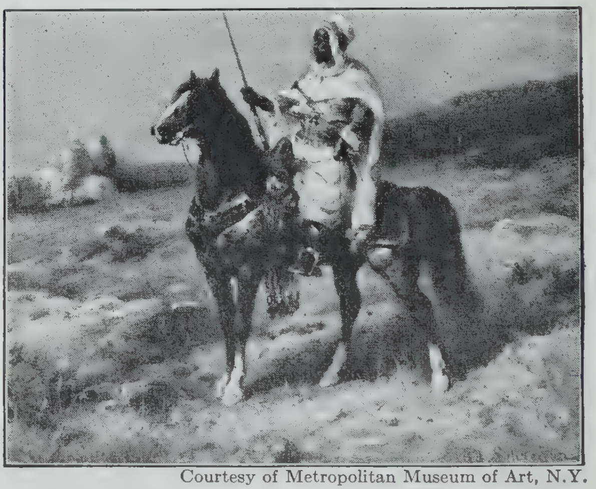
The surface is for the most part a high plateau, with mountains on the west and south-west. The interior is a sun-baked desert. Rain scarcely ever falls, except in the south-west in the fertile province of *Yemen* and in Oman. In those districts, coffee, tropical fruits, almonds, and vegetables are cultivated. The upper hills produce gum-arabic, aloes, and cassia. In the oases of the desert the date-palm flourishes, while the wandering Arabs have large herds of camels, sheep, goats, and donkeys, which they drive from one oasis to another in search of pasturage and water. The Arabian horse is celebrated for its beauty and its speed.

There are but few places of any importance in Arabia. *Mocha*, formerly famous for its coffee, is in Yemen. Hejaz derives its chief importance from its possession of *Mecca* and *Medina*—the sacred cities of the Mohammedans. The chief city of Oman is *Muscat*, a seaport on the *Gulf of Oman*.

Persia.—Persia is almost twice as large as British Columbia, with a population about one-third larger than that of Canada. The Persians, who belong to the white race, are nearly all Mohammedans.

The whole of Persia is an elevated tableland, with many mountain ranges. The climate is very dry, and only a few districts are suitable for agriculture. The most fertile belt is along the Caspian Sea, where cotton, tobacco, poppies, wheat, and barley are grown. The mulberry tree is cultivated, and also roses for the manufacture of attar of roses. In the oases the date-palm furnishes an abundance of dates. The raising of goats, sheep, horses, and camels is the principal occupation of the people.

Manufacturing is carried on principally by hand, Persia being famous for its shawls, rugs, and tapestries, as well as for hand-carving both in wood and in brass. The pearl fisheries of the Persian Gulf are very valuable. There are immense oil fields in the south, largely under the control of British companies. Oil forms two-thirds of the exports of Persia.



Courtesy of Metropolitan Museum of Art, N.Y.

Arab Scout with his Arabian Horse

The principal city is *Teheran*, at the base of the *Elburz Mountains*. It is a typical eastern city, with small, brick houses and narrow, filthy streets. *Tabriz* is another important city, with many manufactures, particularly carpets and rugs.

Afghanistan.—Afghanistan is about the same size as Alberta. The Afghans, about eight million in number, are all Mohammedans. They are a very brave but cruel race.

The north-western part of the country is within the Plateau of Iran, but most of the surface towers above this plateau in tablelands varying in height from four to seven thousand feet above sea-level. The Hindu Kush Mountains enter the country from the north-east. High mountains separate Afghanistan from India, but communication is maintained through the celebrated *Khyber Pass*.

Although much of the surface is rugged, and other parts are sandy and arid, yet there are many fertile valleys and lowlands, where good crops are raised with the help of irrigation. The principal cereals are rice, millet, corn, wheat, and barley. Fruits, such as apples, pears, peaches, and cherries, grow well and form one of the principal articles of diet of the people. Shawls, carpets, and dried fruits are important articles of export. The principal cities are *Kabul*, the capital, *Kandahar*, *Jelalabad*, and *Herat*.

Independent Indian States.— In the Himalaya Mountains are two small independent states, *Nepal*, and *Bhutan*. These states, however, are bound by close ties to Great Britain. Nepal has an area a little greater than that of England and a population of about 5,500,000. The soil is very fertile. The valleys and terraced hillsides yield wheat, rice, tobacco, and spices. Many minerals are found, and the forests contain valuable timber. There are many tribes, but the most interesting are the *Goorkhas*, who have joined the Indian army in large numbers. Bhutan is smaller both in area and population than Nepal. The entire surface is mountainous, with high peaks and enormous glaciers. The forest wealth of the country is great.

Siam.—The kingdom of Siam, with an area somewhat less than that of Alberta, maintains a population slightly larger than that of Canada. *Bangkok* is the chief city and the capital of the country.

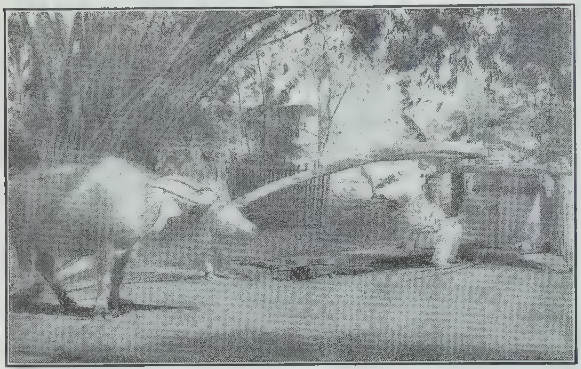
Much of Siam is hilly land, covered with forest and jungle, but the plain of the *Menam River*, which runs through the country from north to south, is of unsurpassed fertility. The yearly inundations of the Menam and the vast number of irrigation canals add to the productiveness of the soil. The staple crop is rice, but tobacco, cotton, sugar-cane, spices, tea, and coffee are also grown. The tropical fruits are abundant. Gold, zinc, tin, rubies, and sapphires are the chief mineral products. Teakwood grows among the higher hills and is brought down the rivers to the coast. The wood of the teak is so heavy that elephants are generally employed in its handling. Rubber trees are now being planted in large numbers.

French Indo-China.—The French colony of Indo-China is somewhat larger than Alberta, and has a population of about 20,000,000. The people are nearly all Mongolians. Buddhism is the prevailing religion. *Hanoi*, the capital, in the northern part of the country, and *Saigon*, in the south, are the chief cities.

A Tea Plantation
South-eastern Asia is one of the great tea districts of the world.

Both the surface and the products are very similar to those of Siam. There are mountains in the northern part, but the greater part of the country is a lowland, with swampy tracts along the coast. The majority of the people live on the lowlands or in the valleys and deltas of the *Mekong* and other rivers. Rice, millet, raw silk, cotton, tobacco, sugar-cane, spices, fruits, tea, and coffee are the principal products. Ironwood, teakwood, and bamboo are exported. The mines yield coal in large quantities.

The Malay Archipelago.—Lying to the south-east and east of the continent of Asia is a wide-spread group of islands, which are collectively known as the Malay Archipelago. Most of the islands are volcanic in origin. The climate is tropical, with an abundance of rain. The people are principally of the Malay stock, and many of the tribes are extremely primitive. The total population of the islands is estimated at over fifty millions. The five largest islands—*Sumatra, Borneo, Java, Celebes*, and the *Moluccas*—belong to the Netherlands.



A Sugar-mill, Manila

The sugar-cane is being crushed in the large tank at the right. Note the lever operated by bullock power.

Sumatra is almost half as large as the province of Ontario. It contains many mountain ranges, with eight active volcanoes. There are many large and fertile plains. The principal products are rice, sugar, coffee, spices, coconuts, sago, corn, and tobacco. Gold and coal are mined, and there are several rich petroleum districts.

Borneo has an area somewhat less than that of Alberta. It is mountainous in the interior, but there are many large coastal plains. The mountain forests produce sandalwood, teak, rubber, and camphor, while in the plantations of the lowland are cultivated cotton, sugar, tobacco, coffee, tropical fruits, and spices. Pepper is the most important product. The minerals include coal, copper, iron, tin, nickel, and diamonds. *Java* is almost twice as large as New Brunswick. The interior is mountainous, but along the coast the surface is low and very fertile. Sugar, coffee, indigo, tea, rubber, and tobacco are the principal exports.

Celebes is over three times as large as Nova Scotia. It is long and narrow, the surface mountainous, and the coast-line deeply penetrated by bays and inlets. The products are similar to those of the other islands. Cattle and horses are raised in great herds on the uplands. The *Moluccas*, sometimes called the *Spice Islands*, resemble Celebes in climate and in animal and vegetable life. They are particularly noted for their nutmegs, cloves, and other spices, but export also tortoise-shell, sago, coconuts, and plumes of the bird of paradise.

The *Philippines* belong to the United States. They consist of the two large islands of *Luzon* and *Mindanao*, and over 3,000 small islands, of which many, however, are mere rocks. The surface of the larger islands is generally mountainous, but there are extensive lowlands with fertile soil, producing the usual East Indian crops, particularly hemp. *Manila*, on the island of Luzon, is the capital. It has an excellent harbor and a large trade, principally with the United States.

Helps.—Locate on the map the lesser countries of Asia. Trace carefully the boundaries of each. Show how in each the climate influences the products. What are the chief exports of each country? From the standpoint of Canada, which are the most important? Name those that belong to European powers. What is the importance of each to the parent country? What is the value of the Philippines to the United States? What products do we get from the East Indies?

THE CONTINENT OF AFRICA

THE CONTINENT AS A WHOLE

Map Questions.—What ocean separates Africa from South America? from Australia? What sea separates Africa from Europe? from Asia? Name the isthmus which joins Africa and Asia. What two groups of islands are near the coast of Africa, not far from the *Strait of Gibraltar?* What large gulf is on the west coast of Africa? What is the southern tip of the continent called? Find a large island off the east coast of Africa. What separates it from the continent? What large river flows into the Mediterranean Sea? What lake is its source? Name a large river flowing into the *Gulf of Guinea.* What river drains most of Central Africa into the Atlantic Ocean? What is the largest river of Africa flowing to the Indian Ocean?

What desert is crossed by the Tropic of Cancer? What desert is crossed by the Tropic of Capricorn? What lake and river are crossed by the equator? Where are the *Atlas Mountains?* the highland of *Abyssinia?* Where is the most of the lowland of Africa? In what zones is Africa? In what zone is by far the greater part of the continent? Which is warmer, Central Africa or South Africa? Why? Which part of Africa has the greatest rainfall? Why?

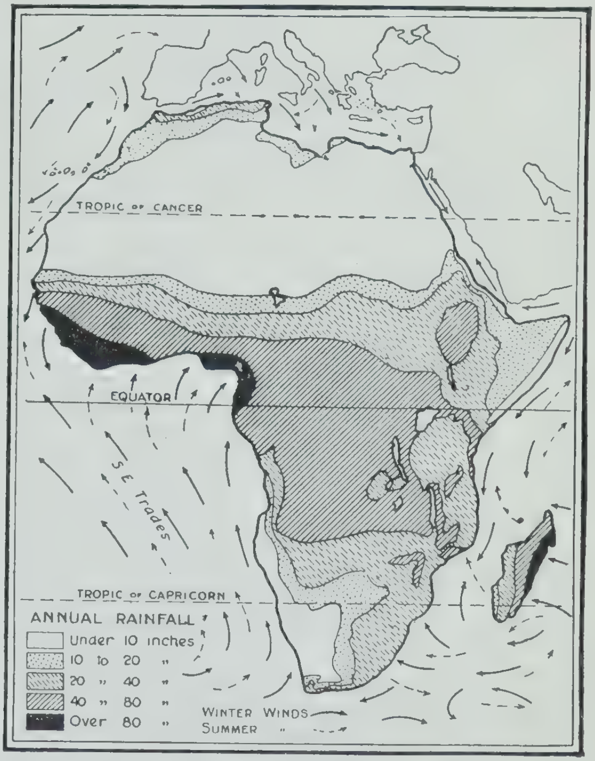
Area and Population.—From north to south Africa extends for 5,000 miles. Its extreme width is somewhat less, being approximately 4,500 miles. Its area is about 11,500,000 square miles—considerably larger than that of North America. Asia alone of all the continents is larger than Africa.

Shape and Coast-Line.—Africa is really a vast peninsula, jutting out from the still vaster land mass of Eurasia. The Mediterranean Sea, which narrows at its Atlantic end to the Strait of Gibraltar, separates it from Europe. The Red Sea and the Gulf of Aden lie between Asia and Africa. Between the Red and the Mediterranean Seas is the low, sandy *Isthmus of Suez,* which links Africa to Asia. The *Indian Ocean* on the east separates Africa from Australia, while the Atlantic washes the whole length of the western coast.

Africa is naturally a peninsula, but man has made an island of it. Ships from Europe can reach the Isthmus of Suez through the Mediterranean, and ships from Asia or Australia can reach it through the Red Sea. Only a narrow strip of sand prevented them from making the voyage between Europe and Asia by this route instead of the much longer way round the *Cape of Good Hope.* A Frenchman named De Lesseps undertook to cut a canal from the Mediterranean to the Red Sea. It took 25,000 men ten years to complete this great undertaking, but at last, in 1869, the canal was ready for traffic. The length of the *Suez Canal,* including the lakes, is eighty-six miles. It is controlled by Great Britain.

The coast-line of Africa is extremely regular. There are no long peninsulas jutting into the sea or long inlets running into the land. On account of this regularity, there are few good harbors in Africa. This is a serious drawback to the development of trade with that continent.

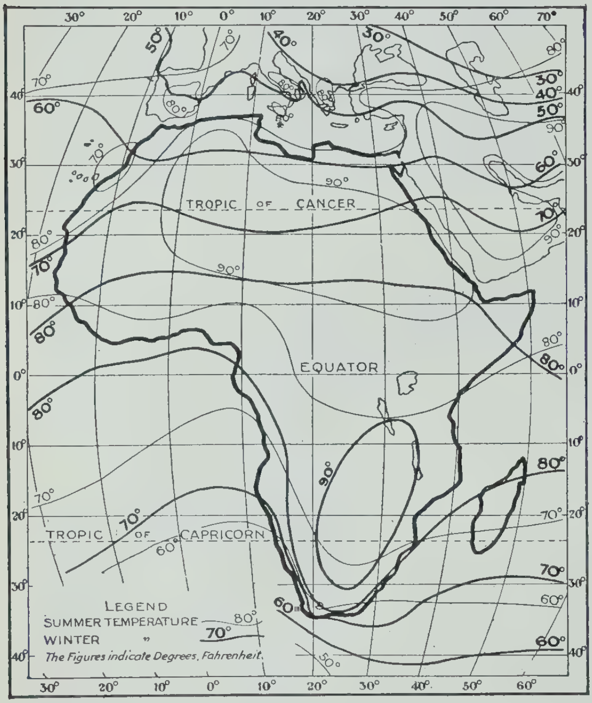
Surface.—Africa is one vast tableland, rimmed about with a narrow coastal plain. Everywhere, except towards the north, the central plateau slopes abruptly to the coastal plain. In the north, however, it passes more gradually into low-lying plains as it approaches the Mediterranean. The tableland is highest along the eastern edge, especially in the *Abyssinian Highland,* in the north-east corner of the continent. At the equator, in the *Central Highland,* are found the very highest elevations of all. Here *Mount Ruwenzori, Mount Kenya,* and *Mount Kilimanjaro* rear their snow-capped heads high into the clouds. Far in the north-west corner of the continent is another range of snow-capped peaks. These are the *Atlas Mountains,* a wild range, the highest peaks of



Rainfall and Wind Map of Africa

which reach an altitude of more than two miles above the ocean level. North of the *Gulf of Guinea* is another outstanding highland known as the *Kong Plateau.* This plateau is, however, of considerably less average elevation that either the Atlas or the Abyssinian Highlands.

The continent shows, too, very great difference of vegetation. The whole northern section, with a few exceptions, has scarcely any vegetation. The west coast, from the district drained by the *Niger River* down past the mouth of the *Congo River,* is densely forested. The thick forest spreads inland to the east of the Gulf of Guinea and covers the whole basin of the Congo. A strip of the eastern coast of no great depth for some distance north and south of the equator is also covered with tropical forests. Between the northern area of scant vegetation and the forest is a broad belt of grass-land, dotted with clumps of trees. This belt of more open country extends southward between the Congo forests and those of the east coast. Towards the south, the forest gradually becomes less dense. The whole of the southern tip of the continent is a vast plateau of rolling and broken land, without many trees. There is also in the south-west considerable desert-land, almost entirely destitute of vegetation of every kind.

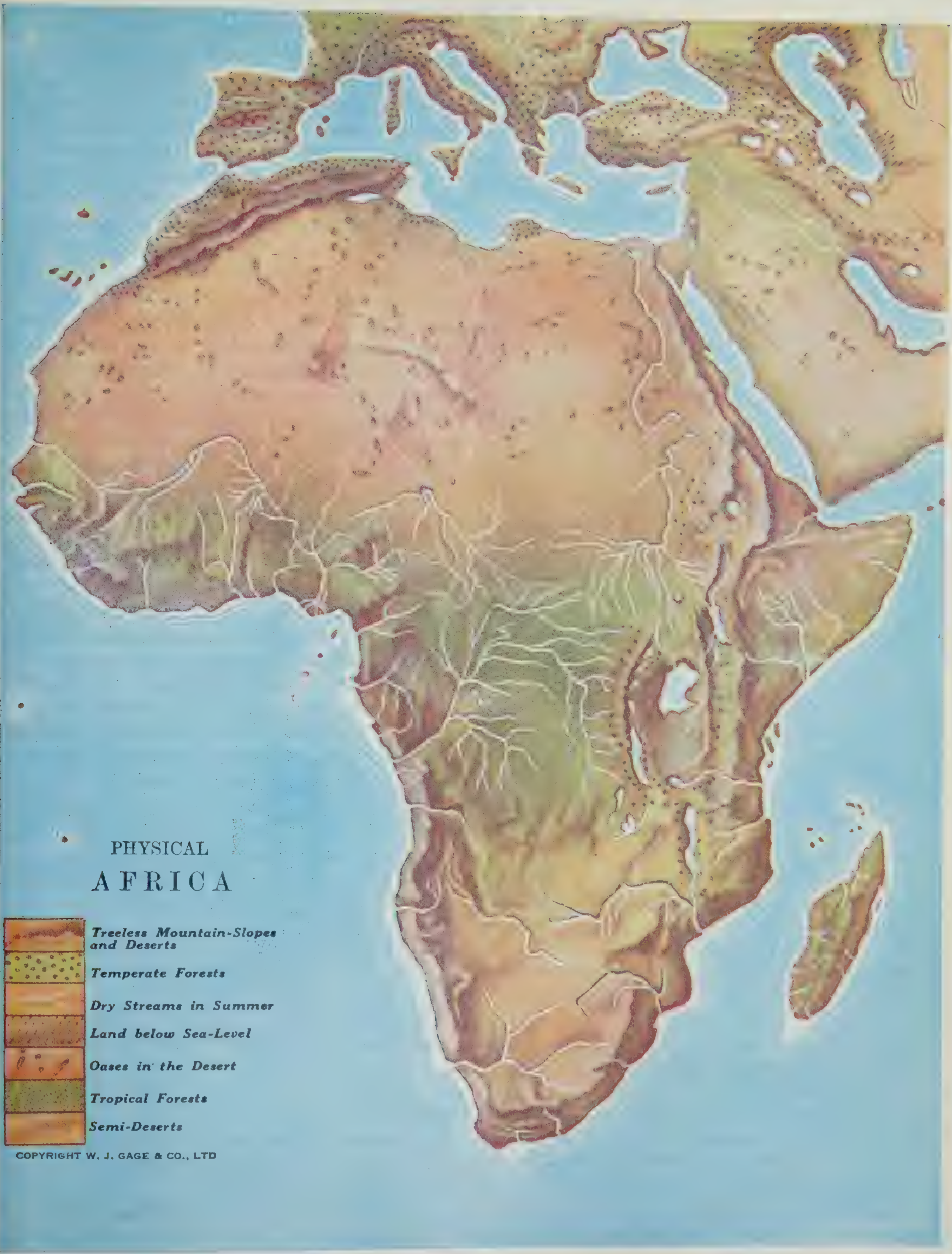


Temperature Map of Africa

Lakes and Rivers.—Lying in the depressions in the Central Highland are a series of great fresh-water lakes. One of these, *Lake Tanganyika,* is the longest lake on the globe. In the rainy seasons its overflow pours through a short channel into the Congo. Farther south lies *Lake Nyasa,* which has an outlet through the *Shire River* into the *Zambesi River,* and thence to the Indian Ocean. Farther north is *Lake Victoria Nyanza,* which is, next to Lake Superior, the largest fresh-water lake in the world. Its overflow is the headwater of the mighty *Nile.* Far to the west, skirting the northern and eastern edges of the Kong Plateau, is another large river, the Niger.

These four rivers, the Nile, the Congo, the Niger, and the Zambesi, are among the great rivers of the world. Yet none of them provides a great highway into the heart of Africa as the St. Lawrence or the Mississippi does into the interior of North America. They are all interrupted by cataracts or falls where they pass over the edge of the central plateau. Yet their long stretches of navigable waters are a valuable means of transportation in a continent which is only slowly and with great difficulty developing a system of railways.

The Nile is the longest river in Africa and the second longest river in the world, being second only to the Mississippi-Missouri. It drains a vast area of over a million square miles in North-east Africa. From its source in Lake Victoria Nyanza it flows almost directly north, being fed for the first 1,500 miles by a number of large lakes in East Central Africa. During the last half of its course, however, it flows through desert regions, where it receives no tributaries. In spite of this fact, the heavy rainfalls of the tropical region ensure an abundant supply of water, so that even near its mouth at the Mediterranean Sea the volume of the Nile is always large.



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Each year the torrential tropical rains cause the Nile to overflow its banks carrying with it soil washed from the fertile hills to the south. When the floods are over and the waters recede, a thin layer of mud is left to fertilize the fields of Egypt and the Northern *Sudan*. Much of the mud, of course, is carried right to the mouth of the river and deposited there. In this way, through many, many years, a plain of river-mud has been built up at the river-mouth. It is fan-shaped, being widest at the coast.

Along the Banks of the Nile, Egypt

The delta of the Nile is about one hundred miles long and extends along the coast for an equal distance. It is growing out into the Mediterranean about eight feet yearly. At high flood the Nile is navigable over the greater part of its course, but during the dry season when the water is low, the parts where cataracts occur, particularly between *Assuan* and *Khartum* in the north, are closed to navigation. During this season, which extends from March to August, the water in these parts is used to irrigate the delta by artificial means. From Khartum to Lake Albert, the Nile is the chief channel of trade and commerce as there are few railways in this region.

The Congo, while not so long as the Nile, has a much greater volume of water and drains an area nearly half as large again as the Nile. It rises in the highlands between Lakes Nyasa and Tanganyika, flows north to the equator, and then bending north-westward it forms an almost perfect horse-shoe before emptying into the Gulf of Guinea. The region drained by the river is a low-lying basin, densely forested and bordered on the north-east by lofty mountains which slope gradually in a series of steps to the sea. From its source in the highlands until it reaches the level of the Congo Basin the river is broken by many falls. These make it useless for navigation. From *Stanley Falls* to *Stanley Pool*, a distance of nearly 1,000 miles, however, the Congo is a mighty river, in many places eight miles wide, and in this section affords uninterrupted navigation. Below Stanley Pool is another series of rapids, to overcome which a railway has been built extending to the port of *Matadi* on the estuary of the Congo, about one hundred miles from the sea. The Congo thus forms the chief means of communication in Central Africa.

The Niger rises in the highlands of the Western Sudan, and after flowing north-east to the boundary of the *Sahara Desert*, it turns south-east and empties into the Gulf of Guinea. About 250 miles from its mouth it is joined by its chief tributary, the *Benue*. Above the junction of the two rivers, the country through which the Niger flows is mostly a fertile plateau, while below it is dense tropical forest. The delta of the Niger is one of the most swampy regions of Africa, and its climate is therefore most unhealthy. The river is almost uninterrupted by rapids and is navigable by small steamers far into the interior.

An Arab Camp in the Desert

The Zambesi, rising in the extreme east of *Angola*, flows through *Rhodesia* and *Portuguese East Africa* into the Indian Ocean. In its western portion it forms the boundary line between Rhodesia and *South-west Africa*. Its upper course runs through a great stretch of grass-land and forest country. Soon after entering Rhodesia, the river plunges into a long, narrow chasm, 350 feet deep, over the magnificent *Victoria Falls*, the largest waterfalls in the world. The delta of the Zambesi, like that of the Niger, is covered with dense tropical forest. The river is navigable for several hundred miles, and many steamers ply regularly on its waters.

Climate.—More than half of Africa lies within the tropics. Even the northern edge and the southern tip of Africa do not extend far beyond them. Africa may properly be called the tropical continent, for no other continent contains so large an area lying within the Torrid Zone. Therefore, almost the whole continent is hot except those areas in which the altitude is sufficiently great to temper the tropical heat. The weather at the extreme north or south is mild even in winter, while in the central region there is no winter at all.

North Africa.—The north-west corner of Africa is far enough north to come within the belt of the west winds during the winter. The Atlas Mountains are high enough to cool the winds and cause a fairly heavy rainfall. Therefore, between the mountains and the sea, is a beautiful, though hilly country, which produces splendid crops of grain and fruit.

The rest of North Africa, however, is almost a rainless land. Most of it lies in the belt of the north-east trades. These winds are dry, particularly when their course is over land. The trade-winds of North Africa come from over the great continent of Asia. The winds which come from the north are cool winds. As they move south, they become warmer, and so absorb instead of giving out moisture. Therefore, the occasional winds which blow from the Mediterranean to Africa can bring little rain.

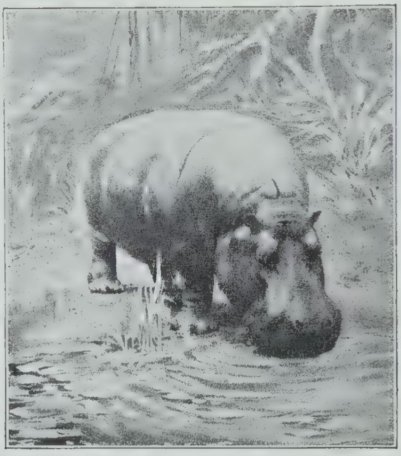
The rainless belt of Africa extends right from the Atlantic to the Red Sea, and from the coast of the Mediterranean as far south as *Lake Chad*. Its total area is greater than that of the entire island of Australia. This is the Sahara Desert, the greatest desert in the world.

The surface of the desert varies a great deal. In some places the winds have swept the rock bare, in others there are beds of gravel, and here and there are vast stretches of sand. Some parts of the sandy desert are ridged with dunes, while others are broken with rough hills. The color of the rocks and soil also varies, from all shades of yellow, to red, brown, and even black.

A Caravan crossing the Sahara

Vegetation is, of course, very scanty, consisting mainly of thorny bushes which can stand the drought. Here and there, however, there are little islands of green in the sea of burning soil. In many places water wells up to the surface from some underground lake or river, and forms a centre for a grove of date-palms. In these oases men live, growing fruit and grain and vegetables on the desert soil, which is very fertile when watered. The main products of the desert are salt, which is plentiful there, and dates. The salt is taken by caravan to Central Africa, where it is highly valued. The dates are sent to the northern coast.

The crossing of the Sahara, while rather difficult and dangerous, is not impossible, owing to the numerous oases at which travellers can find water. In fact, it has for ages been a highway of trade in Africa. Large caravans, sometimes consisting of a thousand camels, carry goods between the Mediterranean coast and the lands of Central Africa.


A Hippopotamus drinking

Although well-equipped caravans can cross the Sahara safely, yet the great desert has proved to be a hindrance to the free movement of men and animals. For this reason, neither the people nor the animals of North Africa resemble those of the rest of the continent. The chief domestic animals, with the exception of the camel, are much the same as those of our own country. Donkeys and goats, however, are used much more generally on the farms there than in Canada.

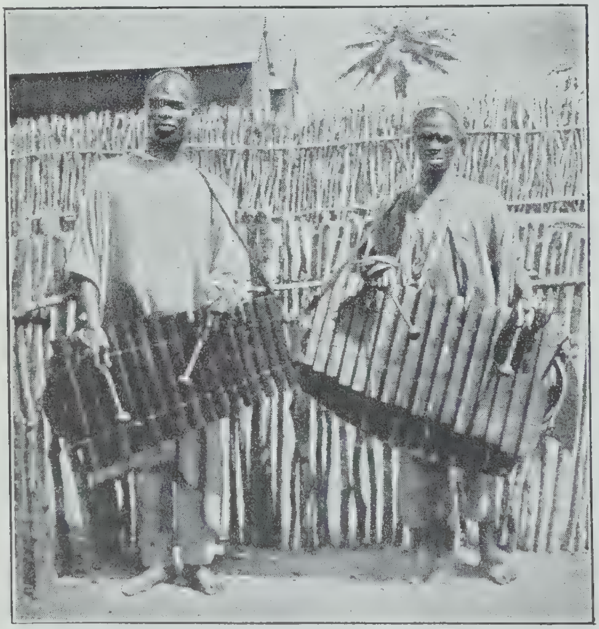


Photo from Ewing Galloway, N.Y.

Natives of the Sudan

Note the native pianos.

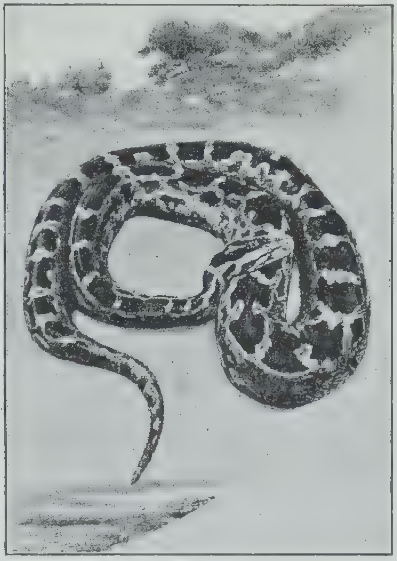
The men of North Africa are much like ourselves. The two chief races are the *Berbers*, many of whom are fair-haired and blue-eyed, and the *Moors*, a brown-skinned, dark-eyed people, who are the descendants of the Arabs who conquered North Africa many centuries ago. The Berbers are an agricultural people, who till the fertile coast-lands or the oases of the desert. Some of them, driven by the Arab conquerors from their farms, were forced into the wilds of the Sahara. These Berbers have formed many robber bands, which prey upon caravans. Some of the Arabs, too, have taken to the desert. These are wandering tribes, who roam the sandy wastes with their fleet horses and swift camels. They pasture flocks of goats wherever they can find sufficient grass. They are known as *Bedouins*.

The desert is broken by one great river, the Nile. Its valley is the only extensive fertile strip in the whole desert area. The largest tributary of the Nile is the *Blue Nile*, which flows down from the highlands of Abyssinia. During the summer, when the sun is directly over this part of Africa, Abyssinia has torrential tropical rains. Then the Blue Nile becomes a roaring flood of muddy water, filled with soil washed from the fertile hills of Abyssinia, so that it overflows its banks.

The Sudan.—Towards the south, the Sahara passes into scrub-land, where a poor, thorny vegetation is fairly abundant, and this in turn becomes a grassy country dotted with clumps of trees. Towards the south-west, this soon changes into dense tropical forests as the north coast of the Gulf of Guinea is approached, and to the east of the gulf it gradually merges into the great forests of the Congo. This vast area of savanna-land is the *Sudan*, a name which means "black." It extends from *Cape Verde* on the west to the base of the Abyssinian highlands on the east, and from the Sahara on the north to the forests of the Guinea coast and the Congo basin on the south.

In the Sudan, the natives are all Negroes, an entirely different race from the people of North Africa. The animals, too, are very different. The abundant grass provides plenty of food for great herds of antelope of many varieties, for buffaloes, giraffes, zebras, and elephants. There, too, the flesh-eating animals—lions, leopards, and hyenas—abound. The savannas of Africa are a sportsman's paradise.

Central Africa.—Central Africa includes the whole basin of the Congo River, the Central Highland, and the narrow coastal plain east of the Central Highland. This region, for the most part, is one of dense forest, due to the heavy tropical rains. The rainfall, as may be expected, is particularly heavy over the slopes of the Central Highland. The great lakes and rivers of this region bear witness to the heavy annual rainfall.


A Python

In the African jungle many of the trees are enormous, towering up to two or three hundred feet into the air. Their branches intertwine, and their foliage is so thick that little light or sunshine penetrates the forests. Big, rope-like creepers stretching from tree to tree make it almost impassable. In the forests live many strange animals. Huge apes and monkeys, the largest of which are the gorilla and the chimpanzee, are found there in large numbers. Herds of elephants roam through the forest. Lurking in its depths are great pythons, which sometimes grow to a length of twenty or thirty feet, with a circumference of thirty inches. Even more dangerous are some of the smaller snakes which infest the forest. Many of these are so venomous that their bite means certain death. Due to the heavy rainfall, numerous rivers run through the jungle, and in the swamp and marsh-land along their banks live many hippopotami and crocodiles.

The black-skinned Negroes are for the most part a tall and well-built race. They have flat noses, thick lips, and black, woolly hair. They live a lazy life, because in their land food is plentiful and can be had for the gathering, and in their hot climate very little clothing is required. Their houses are built in the more open parts of the forest and are constructed of wooden poles covered with straw or leaves. A common fire built in the centre of the village serves the cooking purposes of the whole community. A mud wall or a palisade of tree-trunks is built around the village to protect the inhabitants from wild animals or from attacks of their enemies in the neighboring village. Around the village a clearing is made in which the Negroes grow their food. This consists chiefly of sweet potatoes, mealies, which are the cobs of Indian corn, and manioc, from which tapioca is made. The most useful plant of all is the banana or plantain. The work of planting and harvesting the crops is done by hand by the women, while the men employ themselves hunting in the forest or fighting with hostile tribes.

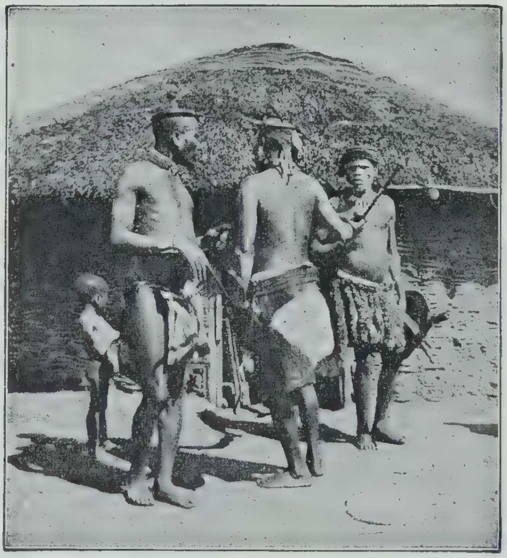
Many useful plants and trees grow wild in Central Africa. The oil-palm is a tall, slender tree with long, graceful leaves springing from the top of the trunk. Each oil-palm bears a cluster of nuts, filled with oil, which is pressed out and used by the Negroes for cooking, for lighting, and for greasing their bodies. Another useful tree is the baobab. It bears a big gourd filled with seeds, which the natives pound into meal and use as food. The empty gourds are used for holding water, salt, meal, and such things. Rubber vines, of which the sticky sap is the raw material from which African rubber is manufactured, are abundant, and the natives gather a great deal of rubber for export to Europe. Rubber, ivory, and palm-oil are the three chief products of the African forests.

South Africa.—Towards the Tropic of Capricorn the savannas and forests gradually merge into more open land, much of which is too dry to support more than a few stunted trees or scraggy thorn bushes. The winds bring a fair amount of rain to the east coast, but the interior in most places is too dry for agriculture. Sufficient grass grows on most of the uplands, however, to permit grazing. This great tract of rather dry grass is called the *veld.*

The natives of this region are lighter in color and more prepossessing than the Negroes of Central Africa. They are tall, well-built, and strong. They are called *Kaffirs* by the white inhabitants of the country. The *Zulus* are the most important Kaffir nation. Not long ago they were the most powerful people in South Africa, with a splendid army of fierce and well-trained warriors. Their favorite weapon is the assegai, a broad-bladed spear, used for either throwing or stabbing. Britain had to fight the Zulus in order to secure the safety of her colonists in South Africa, and finally broke their military strength.

The chief wealth of the Kaffirs is in their herds, which graze on the upland pastures. They also raise a great deal of maize, or Indian corn, as we call it. Many of the white colonists who have settled on the tablelands also rear cattle. There are many sheep-farms, so that South Africa vies with Australia as a producer of wool. Goats are raised in great numbers for their hair, and ostriches are reared on farms for their beautiful plumes. South Africa produces the greater part of the world's supply of gold and diamonds.

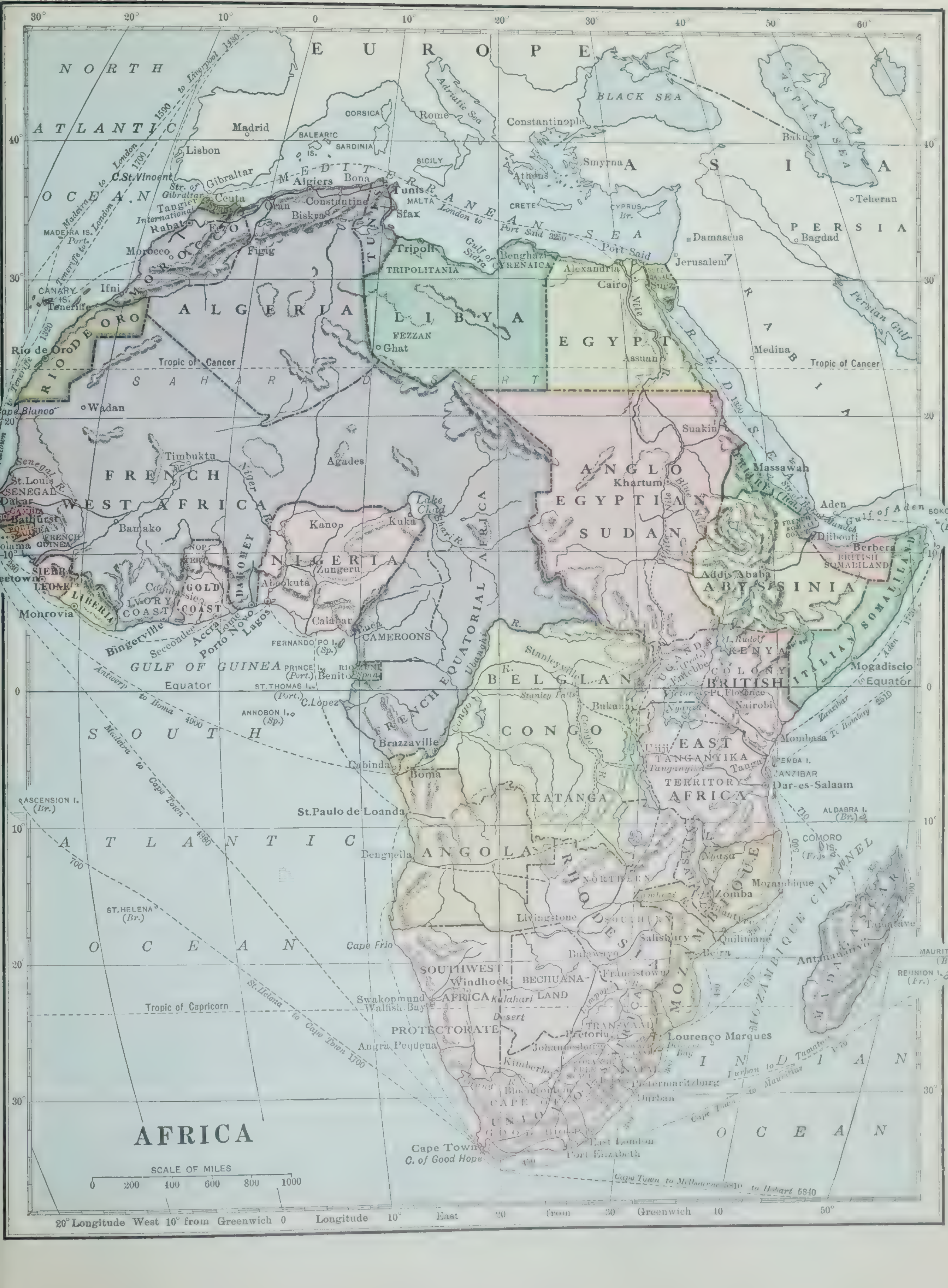
The western part of the southern tableland is especially arid. The driest part of it is known as the *Kalahari Desert.* It is not so dry as the Sahara, however, and scattered natives find sufficient pasturage for their animals in some parts of it.



Negro Warriors of Central Africa

Transportation.—Not many years ago not a steam-boat or a railway train plied in the whole of Africa, except upon the lower reaches of the Nile. The enterprise of the white man, however, is changing this. Steam-boats now ply regularly upon the four great rivers of Africa and upon the great lakes of the Central Highland. The French are building a railway southward from *Algeria* into the Sahara—a railway which eventually will link *French West Africa* with the Mediterranean coast. The British, however, have been the great railway-builders in the Dark Continent. It is now possible to travel, with few interruptions, by rail and steam-boat from *Cape Town* in the south to *Cairo* at the north. Branch lines serve much of *British South Africa.* In East Africa also are two important British railways, one running from *Mombasa* to *Port Florence* on Lake Victoria, the other from *Dar-es-Salaam* to *Ujiji* on Lake Tanganyika. These railways help greatly the colonization and trade of the territory that they serve.

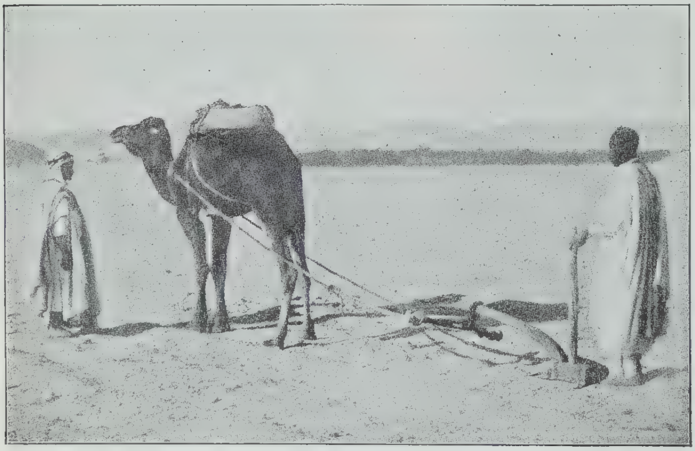
Helps.—Locate Africa on the map. Compare it in area and population with the other continents. Show its relations to the other continents. Trace its coast-line. Compare the east coast with the west coast. Are there many good harbors along the coasts? Trace the course of the Suez Canal. What is its importance to Great Britain? Into what physical divisions is Africa naturally divided? Compare these physical divisions as to (*a*) area, (*b*) climate, (*c*) people, (*d*) animals, (*e*) natural resources, (*f*) industries. Compare Central Africa with the basin of the Amazon. Locate the great drainage basins of Africa. Name the chief rivers in each. Name the larger lakes. Locate the forest region. Name some of the animals of the African forest. Compare with the animals of the South American forests. What are the chief natural resources of Africa?


AFRICA
SCALE OF MILES
0 200 400 600 800 1000
20° Longitude West 10° from Greenwich 0 Longitude 10° East 20 from 30 Greenwich 40 50°
30° 20° 10° 0 10° 20° 30° 40° 50° 60°
EUROPE
ASIA
NORTH ATLANTIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
RED SEA
ARABIA
PERSIA
Persian Gulf
Gulf of Aden
GULF OF GUINEA
MOZAMBIQUE CHANNEL
Adriatic Sea
Gulf of Sidra
Tropic of Cancer
Equator
Tropic of Capricorn
Madrid
Lisbon
Rome
Constantinople
Smyrna
Athens
Baku
Teheran
Bagdad
Damascus
Jerusalem
Medina
Aden
CORSICA
SARDINIA
BALEARIC IS.
SICILY
MALTA
CRETE
CYPRUS Br.
C.St.Vincent
Gibraltar
Str. of Gibraltar
Ceuta
Tangier International
Rabat
Morocco
MOROCCO
Figig
Oran
Algiers
Bona
Constantine
Biskra
Tunis
Sfax
TUNIS
Tripoli
TRIPOLITANIA
Benghazi
CYRENAICA
LIBYA
FEZZAN
Ghat
Alexandria
Port Said
Cairo
Suez
EGYPT
Assuan
Nile R.
ALGERIA
SAHARA DESERT
MADEIRA IS. Port.
CANARY IS.
Teneriffe
Ifni
RIO DE ORO
Rio de Oro
Cape Blanco
Wadan
Timbuktu
Agades
Niger R.
Senegal R.
St.Louis
SENEGAL
Dakar
GAMBIA
Bathurst
PORT. GUINEA
FRENCH GUINEA
Bolama
Bamako
FRENCH WEST AFRICA
SIERRA LEONE
Freetown
LIBERIA
Monrovia
Bingerville
IVORY COAST
GOLD COAST
Coomassie
Seccondee
Accra
Lome
TOGO
DAHOMEY
Porto Novo
Lagos
Abeokuta
NIGERIA
Zungeru
Kano
Kuka
Lake Chad
Shari R.
Calabar
Buea
CAMEROONS
FERNANDO PO I. (Sp.)
PRINCE I. (Port.)
ST. THOMAS I. (Port.)
ANNOBON I. (Sp.)
RIO MUNI Spain
Benito
C.Lopez
FRENCH EQUATORIAL AFRICA
Ubangi R.
Brazzaville
Congo R.
Cabinda
Boma
BELGIAN CONGO
Stanleyville
Stanley Falls
Bukama
KATANGA
ANGLO EGYPTIAN SUDAN
Khartum
Blue Nile
White Nile
Suakin
Massawah
ERITREA (Ital.)
Str. of Bab el Mandeb
FRENCH SOMALI COAST
Djibouti
Berbera
BRITISH SOMALILAND
SOKOTRA (Br.)
ABYSSINIA
Addis Ababa
ITALIAN SOMALILAND
Mogadiscio
L. Rudolf
KENYA COLONY
BRITISH EAST AFRICA
UGANDA (Prot.)
Entebbe
Victoria Nyanza
Pt. Florence
Nairobi
Mombasa
Ujiji
L. Tanganyika
TANGANYIKA TERRITORY
Tanga
PEMBA I.
ZANZIBAR
Dar-es-Salaam
ALDABRA I. (Br.)
COMORO Is. (Fr.)
St.Paulo de Loanda
Benguella
ANGOLA
NORTHERN RHODESIA
SOUTHERN RHODESIA
NYASALAND
L. Nyasa
Zomba
Blantyre
Mozambique
MOZAMBIQUE
Quilimane
Beira
Zambezi R.
Livingstone
Salisbury
Bulawayo
Francistown
Cape Frio
SOUTHWEST AFRICA PROTECTORATE
Windhoek
Swakopmund
Walfish Bay
Kalahari Desert
BECHUANALAND
Angra Pequena
Limpopo R.
TRANSVAAL
Pretoria
Johannesburg
Lourenço Marques
Delagoa Bay
SWAZILAND
ORANGE FREE STATE
NATAL
Kimberley
Bloemfontein
Orange R.
Pietermaritzburg
Durban
CAPE OF GOOD HOPE
UNION
Cape Town
C. of Good Hope
East London
Port Elizabeth
MADAGASCAR
Antananarivo
Tamatave
MAURITIUS I. (Br.)
REUNION I. (Fr.)
ASCENSION I. (Br.)
ST.HELENA (Br.)
Madeira to London 1300
Teneriffe to London 1320
to Liverpool 1430 1590 1700
London to Port Said 3250
Antwerp to Boma 4900
Madeira to Cape Town 4980
St.Helena to Cape Town 1700
Freetown to Teneriffe
Aden to Zanzibar 2510
Zanzibar to Bombay
Durban to Tamatave
Cape Town to Mauritius
Cape Town to Melbourne 5810 to Hobart 5840

THE COUNTRIES OF AFRICA

A large part of Africa is either a part of the British Empire or is under the control or protection of Great Britain. The British countries are treated in a later section. *See page 269.*

Morocco, Algeria, and Tunis.—These three countries are all French dependencies, with the exception of a small part of Morocco under Spanish control. All three are much alike in their general characteristics. Through them all run the Atlas Mountains, parallel to the coast in double and sometimes triple ranges. These ranges reach their greatest height in Morocco and gradually dwindle towards the east. Between the mountains and the sea is a coastal strip of great fertility, well watered in winter by the rain condensed by the mountains from the ocean winds.



Ploughing with Camels in Algeria

The people are mainly Berbers and Arabs with a considerable number of Jews and Negroes. The three countries together are about twice as large as Alberta, with a population of about 13,000,000.

Agriculture is the main industry. Tobacco and rice are grown upon the hot lowlands; and cereals, olives, grapes, figs, lemons, and oranges upon the cooler mountain-slopes. Cattle, sheep, and goats are raised in large numbers. South of the Atlas Mountains, where the desert begins, dates are the only important product. There is one uncultivated crop—esparto grass—used for making paper. This grass grows over large tracts on the mountain plateaus, and great quantities are exported. Cork is another important natural product.

The chief cities of Morocco are *Casablanca*, *Rabat*, the seat of the administration, *Fez*, noted for its leather, and *Tangier*, from which much fruit is shipped to the northern parts of Europe. *Algiers*, the capital of Algeria, consists of two distinct towns. The older part is a picturesque Moorish town, but the newer portion is well built and modern. *Tunis*, which is a seaport, is the capital of the colony of that name.

Libya.—Much of the area of the Italian colony of Libya is desert. The only fertile sections are a narrow strip along the coast and the scattered oases of the interior. For administrative purposes the country is divided into two districts—*Tripolitania* and *Cyrenaica*. *Tripoli*, the capital of the former, is the terminus of several caravan routes across the Sahara. *Bengazi* is the capital of Cyrenaica. There is a considerable trade in dates, gold, ostrich feathers, and other products of the desert or the Sudan. Unfortunately, the harbor of Tripoli is shallow and dangerous. This is a serious hindrance to the development of trade with Europe.

Egypt.—The kingdom of Egypt includes the large tract of country lying between Libya and the Red Sea. This region is part of the great desert of North Africa. It is practically rainless, is about one-half as large as New Brunswick, and yet it maintains a population of 14,000,000. Nearly all the people of Egypt live in the Nile valley—the greatest oasis in the world.

Long before the Roman Empire, Egypt was a great and wealthy country. The rulers of Egypt, called Pharoahs, built great cities, huge temples, and enormous pyramids of stone. The sites of ancient cities have been excavated, and many interesting things have been found. Every museum contains old Egyptian pottery, jewellery, household utensils, and tools made thousands of years ago. Many tourists visit Egypt every year to see the ruins of this ancient civilization.

Courtesy of Canadian Pacific Railway

Camels and Pyramids

The pyramids are the tombs of the Egyptian kings.

While the British were in control of the country, a huge dam was built across the Nile at Assuan. This holds back a portion of the flood-water of the river, forming a long lake. From this enormous reservoir water can be released as needed. This ensures to the farmers a continuous supply of water for irrigation, instead of too great a supply when the Nile is high and too little when the Nile is low. Cotton, sugar-cane, dates, wheat, and maize are the chief crops, but rice and barley are also grown.

Cairo, the capital of Egypt, is the largest city of Africa. It is famous for its many mosques, some of which are exceedingly beautiful. Cairo is a busy commercial city, as through it passes much of the trade of Egypt. *Alexandria* is the chief port, and steamers of many nations make it a port of call. *Port Said*, the third city of Egypt, owes its prosperity to the Suez Canal.

Abyssinia.—Abyssinia is a mountainous country about as large as British Columbia, with a population of 10,000,000. It has a heavy summer rainfall, which causes the Nile flood. The mountain valleys are forested with tropical trees, while the high plateaus are mostly savanna-lands. The people are of the same race as the Egyptians, but there is a considerable Negro population. The religion of the country is a debased form of Christianity. The warlike character of the Abyssinians and the mountainous nature of their country have protected them from other peoples, and so they have been able to retain their complete independence.

The country has an abundance of rich pasture so that the rearing of cattle is the chief occupation of the people. Hides are largely exported. Cotton, tobacco, and coffee are grown, but the wild coffee of the southern districts is of prime importance and forms the chief export. Beeswax is a leading product. *Addis Ababa* is the capital.

Eritrea.—Eritrea, frequently known as *Italian East Africa*, stretches for 670 miles along the Red Sea coast from the *Strait of Bab-el-Mandeb*. The coast-line is fringed with coral reefs and islets. *Massawa*, the seaport, is noted for being one of the hottest places in the world. The whole protectorate is a hot, arid country of little value. The population is scanty, and the productions—chiefly hides, meat, salt, and pearls—are small.

Somaliland.—Somaliland, which forms the north-east corner of the continent, is divided into three protectorates, belonging to France, Britain, and Italy. Like Eritrea, the whole country is hot and dry, with wide expanses of steppe-land in the interior. Somaliland is one of the least known parts of Africa. This is due to the unattractive nature of the country and the fierce and treacherous character of the natives, all fanatical Mohammedans. Except for its game, in-

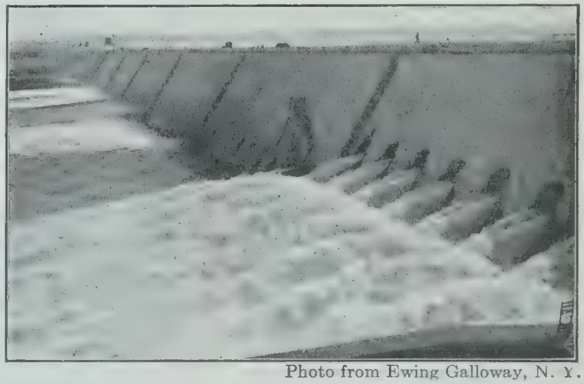


Photo from Ewing Galloway, N. Y.

Assuan Dam, Egypt—Water escaping through Sluices

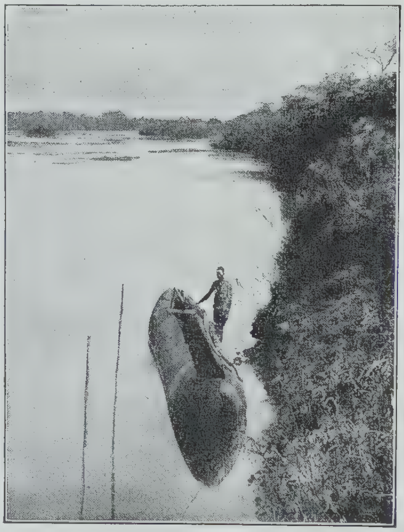
cluding giraffes, zebras, antelopes, and gazelles, the land has little interest or value for the white man.

Mozambique.—Mozambique, or, as it is sometimes called, *Portuguese East Africa*, has an area somewhat greater than that of Ontario and also a slightly larger population. The colony produces sugar, rubber, and coconuts. The mountainous interior is rich in minerals, including gold, coal, and tin. It has a large trade with the Transvaal and with Rhodesia, which adjoin it on the west. The chief ports are *Mozambique*, *Lourenco Marques*, and *Beira*.

Natives of Somaliland

Angola.—Angola, also called *Portuguese West Africa*, is almost twice the size of Alberta. It has a population of over 4,000,000 natives. In the north, the colony is densely forested. In general, the land near the coast is dry and poor, while farther inland are wide stretches of savanna-land. The chief products are coffee, rubber, tobacco, and cereals. *St. Paulo de Loanda*, the capital, is one of the few good ports on the Atlantic coast.

The Belgian Congo.—The vast territory of the Belgian Congo embraces almost the whole valley of the Congo River—an area of over 900,000 square miles. The native population is estimated at 8,500,000. There are only some 12,000 Europeans in the whole country.



On the Congo River
This is a typical scene.

The whole Congo basin is densely forested, and the chief products are those of the forest—palm-oil, ivory, and rubber. There are also government plantations, which produce coffee, cacao, cotton, and rubber. On the eastern and southern frontiers, where savanna-lands replace the forests, cattle-rearing is the chief industry. In the south-east is a rich mineral district called the *Katanga*. It yields a great quantity of copper. *Boma* is the capital of the colony.

French Equatorial Africa.—The large territory between *Nigeria*, the Anglo-Egyptian Sudan, and the Belgian Congo belongs to France and is known as French Equatorial Africa, or the *French Congo*. The whole area is slightly greater than that of the Belgian Congo; the population is less than half as large. As yet there is but little trade, although the country produces ivory, palm-oil, and rubber. *Brazzaville* is the capital.

West Africa.—The term *West Africa* is applied to the southern portion of the west-ward bulge of the continent north of the Gulf of Guinea. This vast territory, as the map shows, is divided among Britain, France, and Portugal. There is, in addition, the small and unimportant Negro republic of *Liberia*. Back of all the colonies on the coast lies the Sahara Desert, which extends southward to about the latitude of *Timbuktu*. The coastal slopes for many miles inward are densely forested. Between the desert and the forest are wide savannas. The chief products of West Africa are palm-oil, kola-nuts, cotton, rubber, gold, and timber.

The Islands of Africa.—The French colony of *Madagascar* is one of the large islands of the world, measuring about 1000 miles from end to end. The natives are engaged mainly in agriculture, and in cattle-breeding. There are about 7,300,000 cattle on the island. Rice, sugar-cane, coffee, cacao, cotton, tobacco, and rubber are all cultivated.

The forests of the island yield mahogany, ebony, and rosewood. Gold is extensively mined. *Antananarivo*, in the centre of the island, is the capital. The island of *Reunion*, about 400 miles east of Madagascar, also belongs to France. Sugar and rum are the chief products.

Fernando Po is the largest island in the Gulf of Guinea. It is volcanic and covered with jungle forests. There are some plantations producing the usual West African crops. This island, along with the district of *Rio Muni* upon the coast, belongs to Spain.

St. Thomas and *Prince Islands*, also in the Gulf of Guinea, are a Portuguese province. They are noted for their cacao plantations. The *Azores, Madeira*, and *Cape Verde Islands* also belong to Portugal. The *Canary Islands*, close to the coast of the barren Spanish colony of *Rio de Oro*, are owned by Spain. These four groups of islands grow early fruits and vegetables for the European markets.

Helps.—On your map locate the countries of Africa, noting particularly those that form part of the British Empire. Compare the British countries in area with the total area of the continent. Note their location in the continent. Describe the surface and climate of Northern Africa. What countries are located there? What are their natural resources? Describe the people. Are these countries progressive? Describe the surface of Egypt. What effect has the Nile on the prosperity of the country? How is agriculture carried on in Egypt? What was the result of the British occupation of Egypt? What is the importance of the Assuan dam? Describe the surface of Abyssinia. How has the country been able to maintain its independence? Of what use is Eritrea to Italy? What are the difficulties connected with settlement in Somaliland? What is the importance of Mozambique and Angola to Portugal? Describe the Belgian Congo. What are its chief natural resources? What are the natural resources of French Equatorial Africa and West Africa? What are the chief exports of Madagascar? Is it of great importance to France? Locate on the map the other African islands. For what is each important? To what country does each belong?

THE CONTINENT OF AUSTRALASIA

Lying in the Southern Pacific Ocean to the west of America are the large islands of *Australia, New Zealand, New Guinea*, and many thousands of smaller islands. All of these are either part of the British Empire or belong to France, the United States, Japan, or the Netherlands. The British Islands are taken up elsewhere. *See page 291.*

New Guinea.—The island of New Guinea is exceeded in area only by Australia. The western half belongs to the Netherlands; the eastern half is either owned or administered by the Commonwealth of Australia. *See page 303.*

A ridge of lofty volcanic mountains forms the backbone of the island. Some of the peaks are so high that they are clad in perpetual snow, although they are so close to the equator. The island has a heavy tropical rainfall, and the mountain-slopes are densely forested. Very little of the interior has as yet been explored. The vegetation and animals are very similar to those found in Northern Australia. The Papuans, as the natives are called, are a branch of the Negro race.

Cotton, rice, tobacco, timber, mother-of-pearl, and coconuts are the principal products of New Guinea, but the rubber tree and the coffee plant have been recently introduced. Cattle, horses, and goats are raised.

The Smaller Islands.—The thousands of islands which dot the Southern Pacific are usually divided into two groups. *Melanesia*, which means the "islands of the blacks," comprises all the western archipelagos, and *Polynesia*, meaning "many islands," all the eastern groups. Melanesia is inhabited by black natives, resembling the Papuans; Polynesia, by peoples much lighter in color and of a better appearance than the Melanesians.

The islands are either of volcanic or of coral formation. The coral islands produce mainly copra and pearls. Some of the volcanic islands are very fertile. On these sugar-cane is grown, as well as fruits and vegetables, such as bread-fruit, coconuts, and yams, which form the staple food of the islanders.

In Melanesia are included the *Solomon Islands*, the *New Hebrides*, *New Caledonia*, and the *Bismarck Archipelago*. The Solomon Islands are British, while the New Hebrides are governed jointly by Great Britain and France. New Caledonia, a French possession, is one of the few places in the world where, outside of Ontario, nickel is found in any quantity. The Bismarck Archipelago is administered by Australia under mandate from the League of Nations. *See page 304.*

In Polynesia are the *Fiji Islands*, the *Samoan Islands*, the *Marquesas Islands*, the *Taumotu Archipelago*, the *Society Islands*, the *Gilbert and Ellice Islands*, and many other groups, large and small. In reality, the Fiji Islands, which belong to Great Britain, are on the boundary between Melanesia and Polynesia, the natives belonging partly to one race and partly to the other. The majority of the Samoan Islands are administered by New Zealand, but some belong to the United States. The Marquesas and Society Islands and the Taumotu Archipelago belong to France, the Gilbert and Ellice Islands to Great Britain. *See page 312.* The Hawaiian Islands, already described, belong to the Polynesian group. *See page* 113.

Helps.—On the map locate the chief islands of the South Seas. Trace the boundaries of Australia, the New Zealand islands, and New Guinea. How far is each of the islands from the Australian coast? How far are the Fiji Islands from Vancouver? What countries in South America are in the same latitude as Samoa? What is the nature of the smaller islands? Describe their surface. What are the chief products? To what country does each group of islands belong? Note particularly the islands that form part of the British Empire.

GENERAL GEOGRAPHY

THE MOTIONS OF THE EARTH AND THE MOON

The Rotation of the Earth.—The sun seems to move through the sky during the day, appearing on the eastern horizon, rising higher in the sky until noon, and then gradually sinking until it disappears from view in the western sky. But, as a matter of fact, the sun does not move. It has already been said that the earth rotates about its axis, just as the school globe rotates about its central wire. When day breaks, the earth has turned far enough to bring the sun within sight. By noon the earth has turned so that the sun is overhead. At sunset the earth has turned so far that the sun can just be seen on the western horizon. During the night we are on the side of the earth which is turned away from the sun, and so its rays cannot reach us. The earth turns from west to east, and therefore the sun appears to move from east to west. The earth turns completely around once in every twenty-four hours.

Day and Night.—Since the sun's rays can light only one-half of the earth's surface at a given moment, one-half of the world is shrouded in the darkness of night while the other is bathed in the light of day. When it is day-time with us, it is night-time on the other side of the world. When we see the sun just rising over our eastern horizon, the people who live just half-way around the world from us are seeing it sinking over their western horizon. The twilight of their evening and of our early dawn is the same, viewed in opposite directions from two points separated by half the distance around the world.

Solar Time.—Let us now imagine that the earth has rotated to the position in which the sun's rays light the half of the earth's surface from 90° east longitude to 90° west longitude. At that moment the sun is directly over the prime meridian, so that it is noon at all places situated upon it, while on the opposite side of the earth, along the meridian of 180°, it is midnight. Since the earth turns from west to east, all places lying east of Greenwich to the meridian of 180° have already had their noon, and it is now some hour in the afternoon between noon and midnight. For the same reason, all places west of Greenwich to the 180th meridian have not yet had their noon, and in them it is some hour in the morning between midnight and noon.

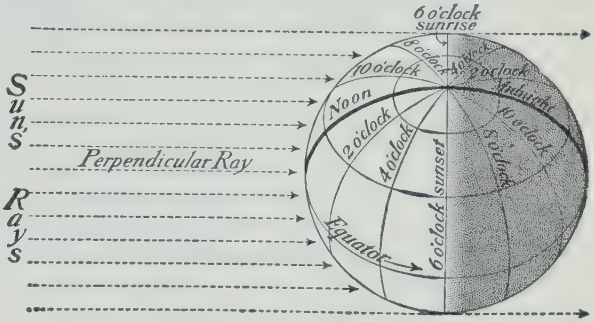
The earth turns completely around once in every twenty-four hours. We may express the same fact in another way by saying that it turns through 360° in twenty-four hours, or through 15° in one hour, or through 1° in four minutes. Therefore, it is very easy to calculate the time at any given meridian as compared with the time at Greenwich. For instance, when it is noon at Greenwich, it is four minutes to twelve in the morning on the meridian of 1° west longitude, and one o'clock in the afternoon on the meridian of 15° east longitude.

Standard Time.—It would be extremely confusing if every place used its own local time. It is convenient for all places within a certain area to use the same time, even if it is not quite accurate for some localities within the area. So Canada, for instance, is divided into five regions, each about 15° wide. All places in each belt have the same time, based upon the meridian of 60°, 75°, 90°, 105°, and 120° west longitude respectively. Consequently, a traveller going across Canada does not need to alter his watch a varying number of minutes at each place on his journey, but sets it back or forward just one hour when he enters another time-belt. Going from east to west, these time-belts are called Atlantic, Eastern, Central, Mountain, and Pacific time respectively. *See map on page 64.* The continent of Europe has three time-belts differing by one hour, and other continents also have similar recognized time regions. Such time is called *standard time.*

The Revolution of the Earth about the Sun.—Besides the daily rotation of the earth about its axis, there is an even greater movement of our sphere. It is rushing continually through space in a wide circle around the sun. It takes one whole year for the earth to make this long journey. The path which it follows is called its *orbit.*

We do not feel the movements of the earth, because there are no shocks in its progress; its daily rotation and yearly revolution are never disturbed in the slightest degree.

The Tilting of the Earth's Axis.—When a top is spinning on the floor, it usually stands straight up and down; that is, its axis is at right angles or perpendicular to the floor. Sometimes the top leans a little as its spins; its axis is inclined from the perpendicular.



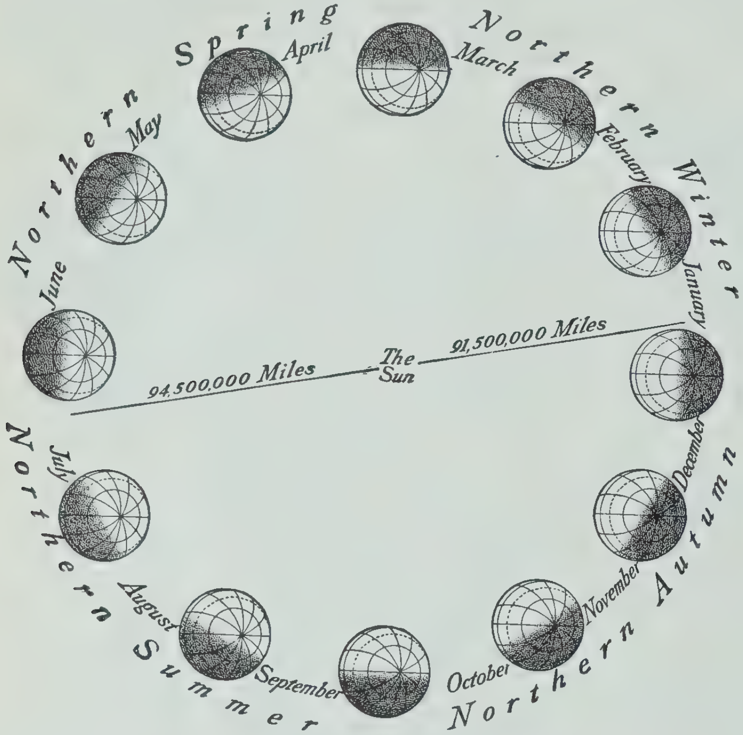
Noon at Greenwich

The earth may be compared to a huge top, spinning along on an invisible floor. The axis of the whirling earth is always inclined a little from the perpendicular, and the amount of inclination never varies. The way in which the axis is tilted may be realized by noting how the school globe is set in its frame. The axis of the globe is not at right angles to the surface of the table or of the floor on which it is standing.

Although the tilting of the earth's axis is always the same, the position of the earth in relation to the sun is always changing. Thus, at one time in the year the north pole is slanted towards the sun and the south pole away from it. As the earth rushes along in its orbit, this position is gradually reversed, until the south pole slants towards the sun and the north pole away from it.

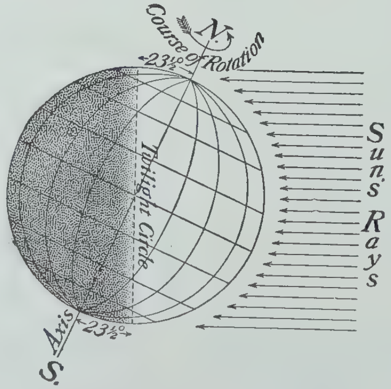
On June 21st the earth reaches the place in its orbit where the north pole is tilted most towards the sun and the south pole away from it. Then the north pole and a large area around it are in continual sunlight. The area in which there is continual sunlight during the whole of this day is bounded by the *Arctic Circle.*

The sun's rays, of course, cannot strike vertically on this far northern region even on June 21st, since the north pole does not face the sun directly. Therefore, even at noon on June 21st, an observer at the north pole would have to look southward to see the sun, although it is higher in his sky on that day than on any other.



Position of the Earth in its Orbit each Month—Notice that the Axis always points in the same Direction

At noon on June 21st the sun is directly over the Tropic of Cancer, which marks the northern limit of the vertical rays of the sun. The southern limit is marked by the Tropic of Capricorn. The name *Tropic* comes from a word meaning "to turn" and is applied to these lines because they mark the points at which the vertical rays of the sun turn and begin to recede.



The Sun's Rays reaching 23½° beyond the North Pole on June 21st

It has already been said that the equator divides the globe into two equal parts. Since the vertical sun on June 21st is far north of the equator, more than half of the Northern Hemisphere and less than half of the Southern Hemisphere are in sunlight. Therefore, it is summer in the north while it is winter in the south. For the same reason, on that day, June 21st, all the northern parts of the world have their longest day and shortest night, while in the south the opposite is the case.

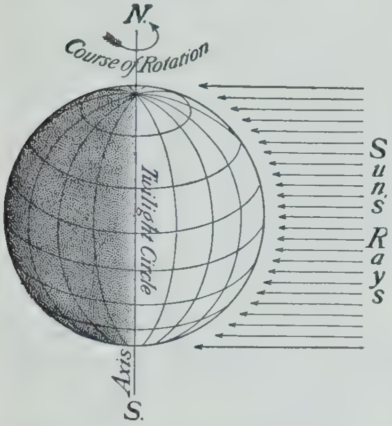
As the earth sweeps along in its orbit, the tilting of the north pole towards the sun becomes less and less. The polar area which is continually in sunlight decreases in proportion. The sun's rays fall vertically a little farther south every day, as the movement of the earth in its orbit gradually brings the south pole closer to the sun.

On September 21st the equator faces the sun directly at noon. On that day the sunlight just reaches both poles, and, therefore, day and night are of equal length throughout the whole world.

As the earth moves on, the south pole remains in the sunlight, while the north pole is tilted away from the sun and is in darkness. On December 21st the earth reaches the point in its orbit exactly opposite to its position on June 21st. Now the south pole is tilted towards the sun. The area about it in which there is continual sunshine on that day is marked by the line called the *Antarctic Circle*. The vertical rays of the sun now fall considerably to the south of the equator, directly upon the Tropic of Capricorn.

On March 21st the earth reaches the point in its orbit opposite to its position on September 21st. Then once more the sunlight reaches both poles, and the whole world has light and darkness for exactly twelve hours each. There are two days, therefore, every year when day and night are equal in length. These two days are called the *Equinoxes*, a word which means "equal nights", that is, nights equal to the days.

During the year the vertical rays of the sun seem to pass from the Tropic of Cancer to the Tropic of Capricorn and back again. Therefore, every place lying between these two tropics receives the rays of the sun vertically twice a year, and at no time are the rays very far from vertical.



The Sun's Rays reaching both Poles at the Equinoxes

No other region in the world ever has the sun directly overhead. The places which lie north and south of the tropics receive the sun's rays slantingly. The slant of the rays increases with distance north or south of the tropics until the poles are reached. Therefore, speaking generally, the farther north or south a place is situated, the colder is the climate.

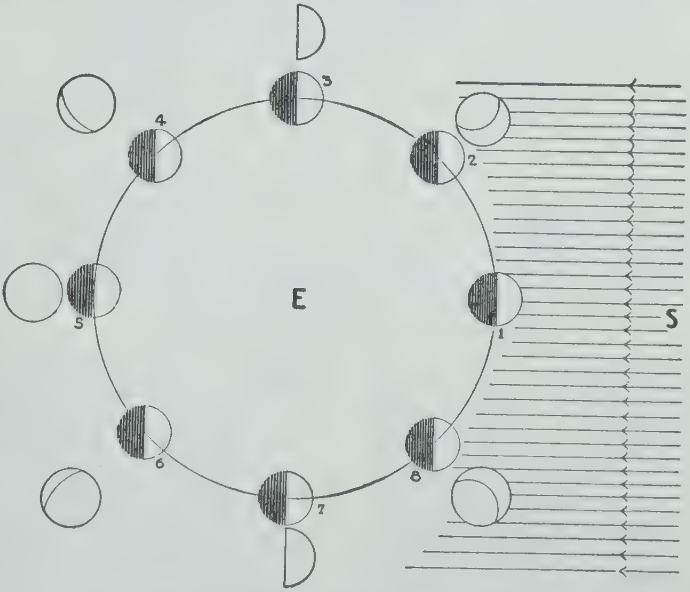


Diagram illustrating the Phases of the Moon

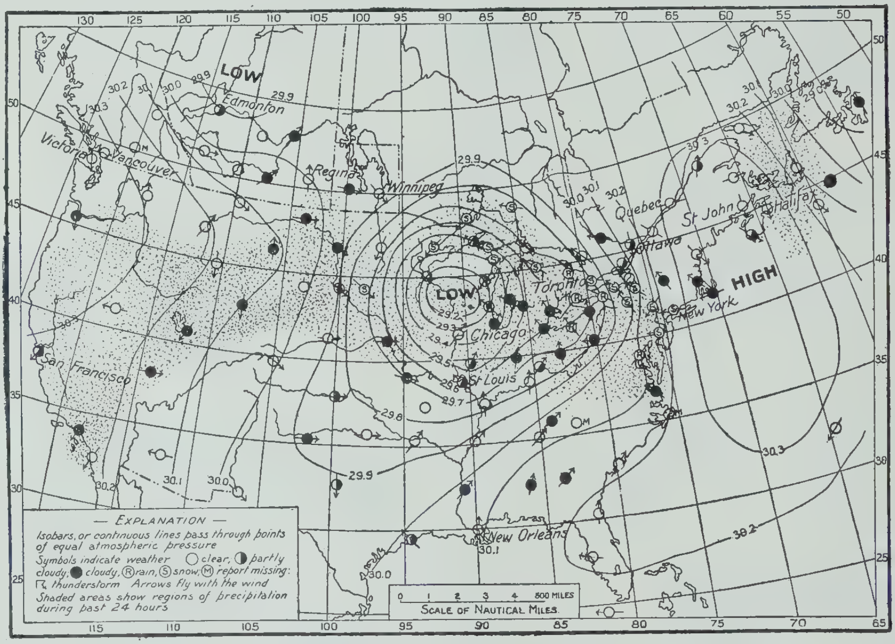
The Moon and its Phases.—The moon is much smaller than the earth. Its diameter is a little more than one-quarter of that of our planet, while its volume is only about one-fiftieth of that of the earth. It appears large in the heavens because it is comparatively close to the earth. The moon does not shine by its own light, but appears bright because it reflects the light of the sun.

As the earth revolves around the sun, so the moon revolves around the earth. There is this important difference, however, that while it takes the earth a whole year to make its circuit about the sun, the moon completes its revolution around the earth in only one month.

As the earth rotates upon its axis, so also does the moon rotate upon its axis. While the earth makes one complete rotation every twenty-four hours, the moon requires a whole month to do this. Since the moon requires the same time to rotate on its axis, as it does to revolve around the earth, the same face of the moon is always turned towards the earth. One-half of the moon's surface has never been seen from the earth's surface.

The different appearances of the moon, as seen from the earth, are known as its *phases*. There are four of these which we speak of as *new moon, first quarter, full moon, last quarter*. One-half of the moon is always illuminated by the sun, no matter what phases or appearance it may present to us. The phases are entirely due to the relative positions of the sun, the earth, and the moon. When the sun, the moon, and the earth are in a direct line, or nearly so, with the moon between the earth and the sun, the illuminated face of the moon is on the side opposite from us, and we can see only the dark outline of the moon. This is the new moon. As the moon moves on its orbit we see the crescent-shaped rim of illuminated surface. As the moon continues to revolve about the earth, the illuminated crescent gradually increases in size until one-half of the illuminated surface can be seen from the earth. This is the first quarter. The relative positions of the three bodies are now sun, earth, moon, not in a straight line, but forming a right angle with the earth at the apex of the triangle.

As the moon continues to revolve, the part of the illuminated surface seen by the people on the earth continues to increase in size until the whole of the illuminated half of the moon is visible. The relative positions are now sun, earth, moon, nearly in a straight line. This phase is known as full moon. As the moon continues to revolve further, the illuminated surface appears gradually to decrease, and finally when the three again form a right-angled triangle with the earth at the apex of the triangle, only half of the illuminated surface can be seen. The moon is now said to be in the last quarter. As the moon continues to move further, the illuminated surface, as seen by us, diminishes more and more until, when the moon has returned to its first position, all is again dark.


LOW
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Chicago
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— EXPLANATION —
Isobars, or continuous lines pass through points of equal atmospheric pressure
Symbols indicate weather ○ clear, ◑ partly cloudy; ● cloudy, Ⓡ rain, Ⓢ snow; Ⓜ report missing:
thunderstorm Arrows fly with the wind
Shaded areas show regions of precipitation during past 24 hours
0 1 2 3 4 500 MILES
SCALE OF NAUTICAL MILES

Pressure Areas—March 6, 1908, 8 a.m.

Helps.—It is noon at Greenwich. What time is it at all places on the meridians of 45°, 60°, 90° east longitude? of 5°, 30°, 105° west longitude? How many hours' difference is there between Pacific time and Atlantic time? between Central time and Greenwich time? The wheat-grower of Canada cuts his grain in July or August, but in Argentina the farmer reaps his crop in January; account for this. Why are there not distinct summer and winter seasons within the tropics? In our part of the world June 21st is the longest day of the year, December 21st the shortest, yet the hottest month is usually mid-July to mid-August and the coldest mid-January to mid-February. Why is this?

THE ATMOSPHERE, WINDS, AND RAIN

The Atmosphere.—The whole surface of the globe is surrounded by air. This covering of air is called the *atmosphere*. The atmosphere is not of very great depth, when compared to the size of the whole earth. It extends for probably 200 miles above the earth.

The air is heaviest, or densest, right at the surface of the earth. It becomes thinner or rarer very rapidly with increasing height above the earth. Mountain-climbers and aviators have found that the air is so rare at a height of even three or four miles above sea-level that they have some difficulty in breathing.

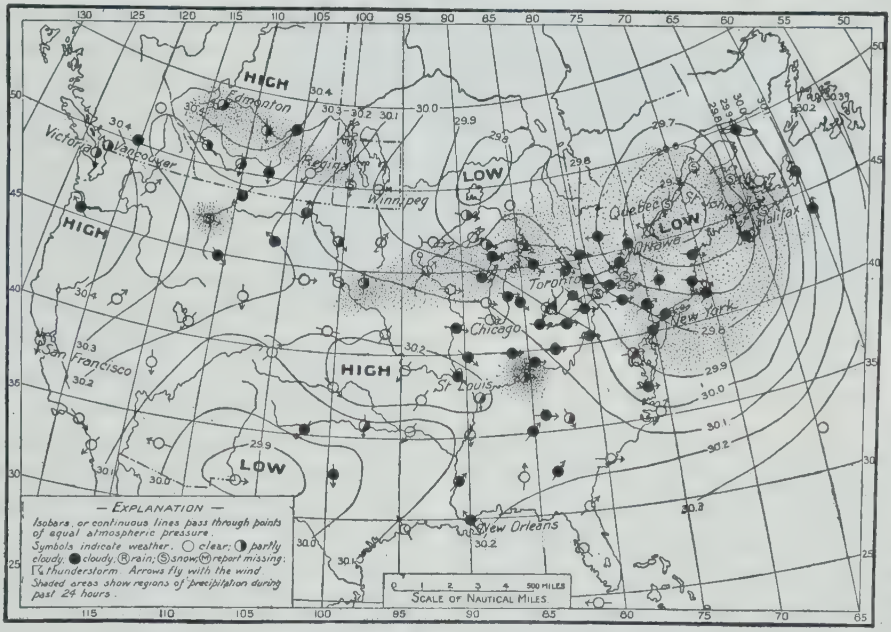
The temperature of the air is highest close to the surface of the earth. Aviators who fly at great heights must wear warm clothing to withstand the cold of the upper air-levels. Lofty mountains are capped with perpetual snow, even though situated, as many of them are, in the tropical regions of the earth.

Winds.—The air is never still. There is a continuous interchange of the air close to the earth's surface with the air at higher levels.

We cannot feel these vertical movements of the air, and, when they are occurring, we say that there is a *calm*. The air also moves horizontally over the surface of the earth. Then we can both feel it and see its effects upon the objects around us. These horizontal movements of the air are called *winds*.

The winds are due to certain definite causes and follow, in the main, certain general courses. Some knowledge of the causes and effects of winds is essential for a clear understanding of the great variations in climate and vegetation which exist in the different parts of the world.

There are two important things to remember. The first is that air; when heated, expands, becomes lighter, and therefore rises; while air, when cooled, becomes heavier and tends to sink towards the earth. An area in which the air is comparatively light is called an *area of low pressure*. An area in which the air is comparatively heavy is called an *area of high pressure*. The second essential point is that the air always tends to move from an area of high pressure towards an area of low pressure.


HIGH
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Halifax
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Ottawa
Toronto
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San Francisco
HIGH
St. Louis
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30.4
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29.7
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Isobars, or continuous lines pass through points of equal atmospheric pressure.
Symbols indicate weather. ○ clear; ◑ partly cloudy; ● cloudy; Ⓡ rain; Ⓢ snow; Ⓜ report missing; thunderstorm. Arrows fly with the wind.
Shaded areas show regions of precipitation during past 24 hours.
0 1 2 3 4 500 MILES
SCALE OF NAUTICAL MILES

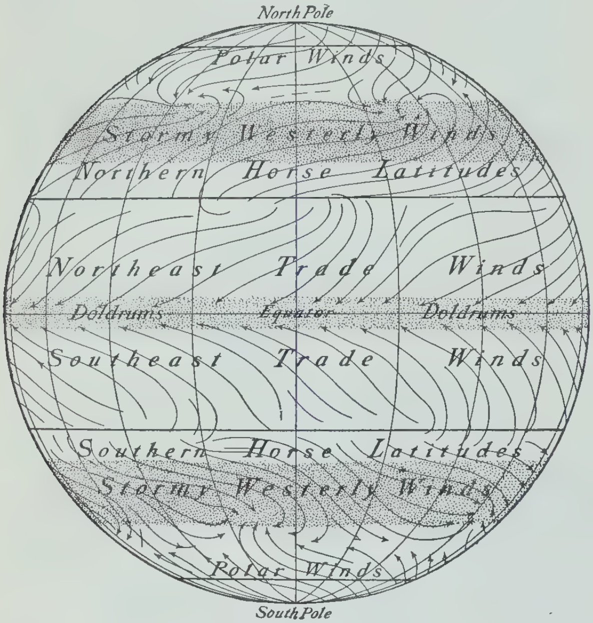
Pressure Areas—March 7, 1908, 8 a.m.

It has been pointed out that the Torrid Zone is the only region on which the sun's rays ever strike vertically. The vertical rays of the sun pass across this zone twice a year. Therefore, there is a belt of light, heated air girdling the earth in the region of the equator. This belt will shift a little from north to south and back again as the vertical rays of the sun shift their position. The heated air in it is continually rising. Since this vertical movement of the air cannot be felt, an area of calm results. This area is called the *doldrums*. It was much disliked by sailors before steamships made them independent of the wind. A ship caught in the doldrums might be held for weeks, while the sails flapped idly on the yards and the crew whistled for a breeze.

The doldrums, therefore, form an area of low pressure, while the cooler air to the north and south forms two areas of comparatively high pressure. Consequently, there is a constant flow of air from these areas towards the equator. In the Southern Hemisphere the flow comes from the south-east; in the Northern Hemisphere, from the north-east. The winds which result are the steadiest in the world. They were of such great use to sailors in the days of sailing ships that they were called *trade-winds*. Since winds are named from the direction from which they come, these are called the *south-east trades* and the *north-east trades* respectively. The former blows over a belt to the south of the equator about 2,000 miles wide; the latter blows over a belt of equal width to the north of the equator. During our summer-time, the north-east trades are felt farther north than during the winter.

As the trade-winds approach the doldrums, they become warmer, and the air forming them tends to rise. Then, in the area bordering the central belt of calms, they die away in fitful breezes.

The air which rises in the doldrums spreads out at a high level and flows north and south over the top of the trade-winds. At last it reaches the areas from which the trade-winds begin to move towards the equator. There it sinks to the surface of the earth to take the place of the air flowing towards the equator. Since there is no wind where the movement of the air is vertical, there is a belt of calms marking the northern limit of the north-east trades and another at the southern limit of the south-east trades. These areas are called the *horse latitudes*. They lie a little to the north of the Tropic of Cancer and a little to the south of the Tropic of Capricorn.



The Wind Systems of the World

In addition to the doldrums, there are two other great areas of comparatively low pressure. One is north of the horse latitudes in the Northern Hemisphere, the other south of the horse latitudes in the Southern Hemisphere. Consequently there is a fairly steady flow of air from the horse latitudes towards the poles as well as towards the equator. In the Northern Hemisphere the flow comes from the south-west; in the Southern Hemisphere, from the north-west. The winds which result are commonly known as the *prevailing westerlies*. Nearly all of the temperate zones lie in the path of the prevailing westerly winds. They are more variable than the trade-winds, particularly in the Northern Hemisphere, where there is a great deal of land. As Canada lies in the region of the prevailing westerlies, the higher clouds can usually be seen moving from the west towards the east.

Land heats more quickly than water and to a far higher temperature when exposed to an equal amount of sunshine. Land also cools more quickly than water. For this reason, the winds are much more steady on the ocean than on the land. The air lying over the land tends to become an area of comparatively low pressure during the summer-time, and an area of high pressure during the winter. Consequently, in the higher latitudes, where the difference in temperature between bodies of land and water is most marked, the wind blows from the ocean towards the land during the summer and from the land towards the ocean during the winter. This is true to a certain degree of all the continents.

The Monsoons.—The finest examples of such winds are the *monsoons*, which blow over part of Asia. In the summer-time, the vast central plateau of Asia becomes excessively hot, and the air above it forms a great area of low pressure. Consequently, from May to September, the wind blows steadily towards the continent from the Indian Ocean on the south and from the Pacific Ocean on the east. The winter monsoons blow just as steadily from the continent towards the oceans from November to February.

The Chinooks.—One of the most peculiar of local winds is the warm, dry *Chinook* which blows at intervals over the prairies east of the Rocky Mountains. This wind blows from mountains and plateaus covered with ice and snow, and yet it reaches the prairies as a warm, dry wind. The warmth of the sun has no relation to this wind, as it arrives as frequently in the dead of night as in the day-time.

The winds coming from the Pacific are forced up the steep western slopes of the Rockies, and there the moisture which they carry is condensed and falls as rain. These winds, therefore, are dry but cold as they begin their descent down the eastern slopes of the Rockies. But the temperature of the air rises as the wind descends. It is estimated that the rise in temperature is half a degree for every 300 feet of descent. Consequently, the wind reaches the prairies, 5,000 to 8,000 feet below the summit of the Rockies, as a warm, dry wind. The increase in warmth is due largely to the increase in pressure from the upper volume of air as the wind descends.

Rain.—Have you ever watched the kettle boiling on the kitchen stove on a winter's day? A stream of steam comes from the spout and vanishes into the air. At the same time the water in the kettle grows less, and, in time, the kettle will boil dry, and no water will be left. The water has passed into the warm air of the kitchen as *water-vapor*.

At the same time the cold window-pane clouds over with moisture, which becomes so thick at last that little streams of water trickle down to the sill. Yet, before the kettle began to boil, the glass of the window was perfectly dry. The water from the kettle has passed as invisible vapor through the warm air of the kitchen and has reappeared as visible liquid upon the cold window-pane.

From this we may learn two important facts. Warm air takes up, or *absorbs*, water in the form of vapor. The water-vapor turns again into liquid, or *condenses*, when the air is cooled, just as it does when the warm air of the kitchen is cooled by contact with the cold window-pane.

In applying this knowledge, it is necessary to keep in mind these two important facts. The warmer the air, the more water-vapor it can hold. When the air is cooled, this moisture condenses and appears as rain, or snow, or dew, or fog.

In the tropics, where the heat is greatest, the rainfall is very heavy. The heated air absorbs a great deal of moisture. As this moisture-laden air rises, it becomes cooled. Then the water-vapor condenses and falls in heavy showers upon the earth. In the belt of greatest heat which shifts north and south of the equator with the vertical rays of the sun, showers of rain are of daily occurrence.

Desert Vegetation

The trade-winds blow towards the equator. They grow warmer as they approach it, and so they absorb moisture during the whole of their journey. This is not condensed until the air rises and is cooled above the central hot belt. Consequently, the trades are dry winds, and bring no rain to the lands over which they blow, unless mountains be in their path. Then the wind is forced into higher levels, becomes cooler, and gives a copious rainfall to the land lying upon the windward side of the mountains.

When the trades have come a long distance over land, they become so dry that, instead of bringing moisture, they rob the land of the little that it possesses. The parched ground is bare except for scattered plants of the few varieties which can live with very little moisture. The greatest deserts in the world are the *Arabian Desert* in Asia and the *Sahara Desert* in Northern Africa. These lie in the path of the north-east trades.

Winds which blow over oceans towards land reach it well laden with moisture. If these winds are cooled, heavy rains result.

The monsoons of Asia, too, bring with them the priceless gift of rain. Before the summer monsoons begin to blow, the fields of India and China are parched and dry. Then comes the wind from the great oceans. The rain falls heavily over the land and waters the crops which nourish hundreds of millions of people. If the monsoons do not blow, the crops fail, and famine takes its toll of the crowded population.

Helps.—Why are both mountains and shores favorite summering places? It is frequently observed on the shores of the Great Lakes that during the day the wind blows gently from the water to the land. At sunset and for a time following there is a calm, or only fitful breezes. A little later a breeze springs up blowing from the land to the water. Account for this. A pan of water left exposed to the air on a warm day is soon empty. Where does the water go? Does it vanish so quickly in the cool days of late autumn? Why? The great deserts of the world lie in the trade-wind belts. Prove this statement by reference to Asia, Africa, Australia, South America, and North America.

CLIMATE

Weather and Climate.—By *weather* we mean the condition of the atmosphere at a particular time. So we say, "It is fine weather *to-day*", or "We had warm weather *last week*", or "We have had much bad weather *this year*." The atmosphere may be hot or cold, still or moving, cloudy or clear, wet or dry. So we may speak of the weather as being warm or cool, calm or windy, cloudy or clear, rainy or dry. We may also describe it by the effects upon us, and so we speak of it as being invigorating or enervating, agreeable or unpleasant, healthful or unhealthful.

By the *climate* of a place we mean the usual or average state of its atmosphere, without limiting our description to any definite period of time. The same terms are used when we speak of climate that are employed with reference to the weather. When we say that Florida has a warm climate, we mean that the weather is usually warm there. It does not mean that there is never cool or even cold weather in Florida. There is some cool weather, but it is unusual.

Although there are infinite variations of climate in different places on the earth's surface, there are three main types of climate which are distinguished by certain outstanding characteristics.

Oceanic Climate.—Large bodies of water affect climate to a great extent. If the prevailing winds blow from the water to the land, the climate of the latter is warmer in winter and cooler in summer than it otherwise would be. Rainfall in such places is usually abundant, especially if there are mountains up which the winds are forced. Such a climate is called an *oceanic climate.* Nearly all islands and the west coasts of the continents lying in the course of the prevailing westerlies enjoy an oceanic climate.

Continental Climate.—The moderating influence of the sea does not extend far into the interiors of the continents, especially if high mountain ranges parallel the west coast of the continent, as in North America. Consequently there is a great difference between summer and winter temperatures in such regions within the Temperate Zone, and the rainfall is less than in regions with an oceanic climate. Such a climate is called a *continental climate.*

Mediterranean Climate.—Certain coastal regions are in the trade-wind belt during the winter season, but during the summer are in the area of the horse latitudes. In these regions the rainfall comes mainly in winter. The summer is hot and dry. Such regions are said to have a *Mediterranean climate,* so called because the largest area in the world affected in this way is the coastal region of the Mediterranean Sea. Much of California has a Mediterranean climate.

Helps.—Why are the capitals of Ecuador, Colombia, and Venezuela all built high among the mountains? The climate conditions are very similar in Northern Chile, in South-West Africa, and in West Australia. Account for the similarity. The coldest place in any of the continents is found in the interior of Siberia. Why is it colder there than in any place in North America? It is colder 200 miles south of the coast of the Arctic Ocean than on the coast itself. Account for this. The coast of Alaska, in the same latitude as that of Southern Greenland, has a much milder climate. Why?

THE OCEAN

Ocean Currents.—We can see the movements of the water upon the surface of the ocean. Beneath the surface, too, there is constant movement, although we cannot see it. The water of the ocean is never still.

Water, like air, becomes lighter when warmed and heavier when cooled. Whenever a body of water is heated in one place and cooled in another, differences of density are produced which cause a movement of the water. The heated water tends to move along the surface towards the cooled area, while the cooled water flows in the opposite direction below it. In the ocean, there is a slow but steady interchange of water between the hot equatorial belt and the cold polar seas. The dense water of the Antarctic and Arctic Oceans keeps settling down to the bottom. Then it flows off in the lower levels of the ocean towards the equator. There it slowly rises again to the surface, becomes warm, and moves back towards the poles.

This constant though almost imperceptible movement of the ocean water is of great importance. Because of it the tropical seas are cooler than they otherwise would be and the polar seas warmer. The winds which blow over them are similarly affected. This slow, steady circulation of the ocean water is one of the reasons why the ocean exerts a moderating influence both upon the extreme heat of the tropics and upon the severe cold of high latitudes.

There are, however, even more important movements of the ocean water. In each of the three great oceans are two immense systems of surface currents. These currents are of practical importance, partly because they have a certain influence upon sailing and steamship routes, but chiefly on account of their indirect influence upon climate. They determine, to a certain extent, the climate of the coasts along which they pass by raising or lowering the temperatures of the winds which blow over them towards the land.

The trade-winds of the Atlantic, covering two belts parallel to the equator, drive before them two westward currents, called the *North* and *South Equatorial Currents*. The South Equatorial Current strikes the wedge-like coast of Brazil and is split in two. One part turns south and flows down the east coast of South America until it reaches the latitude of the westerlies. These turn its course and drive it eastward to the African coast. There it turns and flows northward towards the equator until it rejoins the other part of the South Equatorial in the trade-wind belt. In this way is formed a great whirl or eddy of water, two to three thousand miles wide, in the South Atlantic. This is called the *South Atlantic Eddy*. It moves in the direction opposite to that of the hands of a clock, and so we say it flows *counter-clockwise*.

The other part of the South Equatorial flows through the Caribbean Sea into the Gulf of Mexico. The North Equatorial also sends part of its flow into the Caribbean Sea, but most of it turns northward before reaching the West Indies.

The level of the Gulf of Mexico is raised by the great influx of water poured into it from the south by the equatorial currents. The surplus water flows out through the Strait of Florida and is known as the *Gulf Stream*, the most famous ocean current in the world. It forms a vast river of warm, blue water, sixty to eighty miles wide and several hundred feet deep. Its bright blue is so different from the dark green of the rest of the ocean that sailors can often actually see the edge of the stream as they enter it.

The Gulf Stream turns sharply to the north just outside the Strait of Florida, and, reinforced by the other section of the North Equatorial Current, sweeps along parallel to the coast. It gradually becomes wider, shallower, and cooler. It disappears entirely as a distinct current, when it reaches the latitude of the prevailing westerlies.

The westerlies keep driving the surface water of the North Atlantic across towards Europe. This current is called the *North Atlantic Drift*. Off the coast of Spain part of the North Atlantic drift turns southward, and, under the name of the Canaries Current, flows towards the equator until it rejoins the North Equatorial Current. The greater part of the North Atlantic Drift is swept north-eastward past the British Isles and along the coast of Norway and loses itself in the cold polar waters at the north.

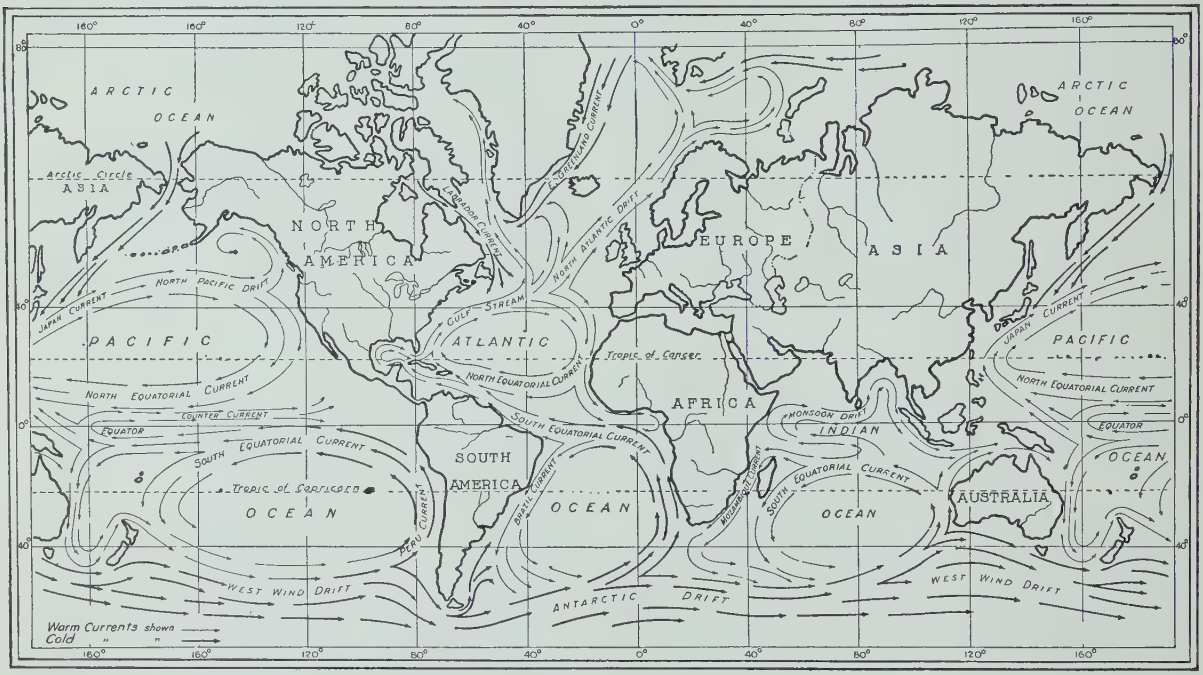
The North Equatorial Current, the Gulf Stream, the North Atlantic Drift, and the Canaries Current form another vast eddy in the North Atlantic. It moves in the same direction as the hands of a clock, and so we say it flows in a *clockwise* direction.

The circulation of water in the Pacific Ocean is very similar to that of the Atlantic, although, of course, on a much larger scale. There is a clockwise eddy in the North Pacific, and a counter-clockwise eddy in the South Pacific. A warm current, called by the Japanese the *Kuro Sivo*, or Black Stream, flows northward along the east coast of Asia. It corresponds pretty closely to the Gulf Stream in the Atlantic.

The part of the Indian Ocean lying south of the equator contains an eddy similar to those of the South Atlantic and the South Pacific. North of the equator, the circulation of the Indian Ocean is determined by the monsoons. In the summer, when the south-west monsoon is blowing, the eddy moves in a clockwise direction. In the winter the north-east monsoon reverses the direction of the eddy, which then moves in a counter-clockwise direction.

The water in the centre of these great eddies is comparatively quiet. In the centre of the North Atlantic eddy is a great expanse of calm water, thick with floating sea-weed. This is called the *Sargasso Sea*, which means the Sea-weed Sea. There are similar Sargasso seas in the centres of all such eddies. The one in the North Atlantic is the best known.

Besides the currents which form the eddies, there are several important cold currents flowing from the polar seas towards the equator. The *Labrador Current* flows through Baffin Bay into the Atlantic and creeps down the coast of North America. It meets the Gulf Stream near Newfoundland. The meeting of the warm and cold waters of the two currents causes the fogs which are so frequent in that region. As it sweeps down from the Arctic region it carries with it the gigantic icebergs which render navigation through the fog difficult and dangerous. A very similar cold current sweeps down the east coast of Asia.



Map of the World Showing the Ocean Currents

There are three cold currents flowing northward from the Antarctic Ocean. One passes along the west coast of South America, another flows past the west coast of Africa, and the third parallels the west coast of Australia. These currents, however, are not nearly so cold as the currents from the Arctic.

Can you now summarize the effects of the currents upon the continents which they pass? How will the climate of the west coasts of South America, Africa, and Australia be affected by the cold currents from the Antarctic? How will the climate of the east coasts of these continents be influenced by the warm currents flowing southward from the equator? The currents affect climate by warming or cooling the winds which blow over them towards the land.

In the Southern Hemisphere, within the Temperate Zone, the east coasts of the continents are somewhat warmer than the west coasts in the same latitude. In the Northern Hemisphere, the opposite is the case. The east coast of Asia is colder than the west coast of Europe to which the North Atlantic Drift brings the warm water of the Gulf Stream. In North America the west coast has a more moderate climate than the east, as the prevailing westerlies are warmed during their passage over the North Pacific Drift.

Tides.—The water-line along the shores of our lakes does not change very much. Although there is a slight shifting of the water-level from season to season or from year to year, it is usually so little that we do not notice it.

Along the sea-coast, however, the water-line is constantly and perceptibly changing. Twice daily the water reaches high-water mark, and twice slowly recedes to low-water mark. If the shore slopes down gently, the receding water leaves a wide strip of the bottom exposed, so that one may walk far out over the ground that was covered with water only a few hours before. At every place on the sea-coast high and low water succeed each other at intervals of about six and one-quarter hours.

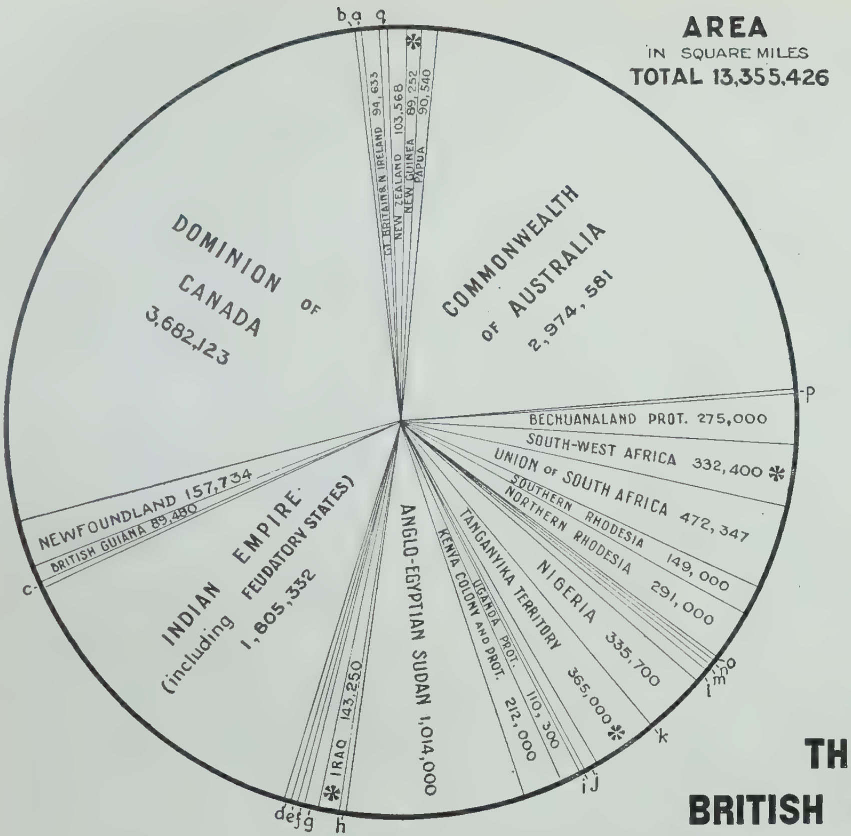
This rise and fall of the water we call the *tide.* When it is rising it is called *flood-tide*; when falling, *ebb-tide.* The times of high tide follow each other quite regularly at an interval of about twelve and one-half hours. The high-water mark and the low-water mark vary, however, from day to day. The range between the two is greatest twice a month, once, about the time of the full moon and again, at the time of the new moon. It is least once a fortnight also, when the moon is in its first and third quarters. In the open oceans, the tidal range is not more than two to five feet. When, however, the tides dash against land or enter deep gulfs or river-mouths, the accumulating tidal waters sometimes reach a great height. The average height of the tide along the eastern coast of North America is from nine to twelve feet. It reaches its greatest height in the Bay of Fundy, Nova Scotia. *See page 32.*

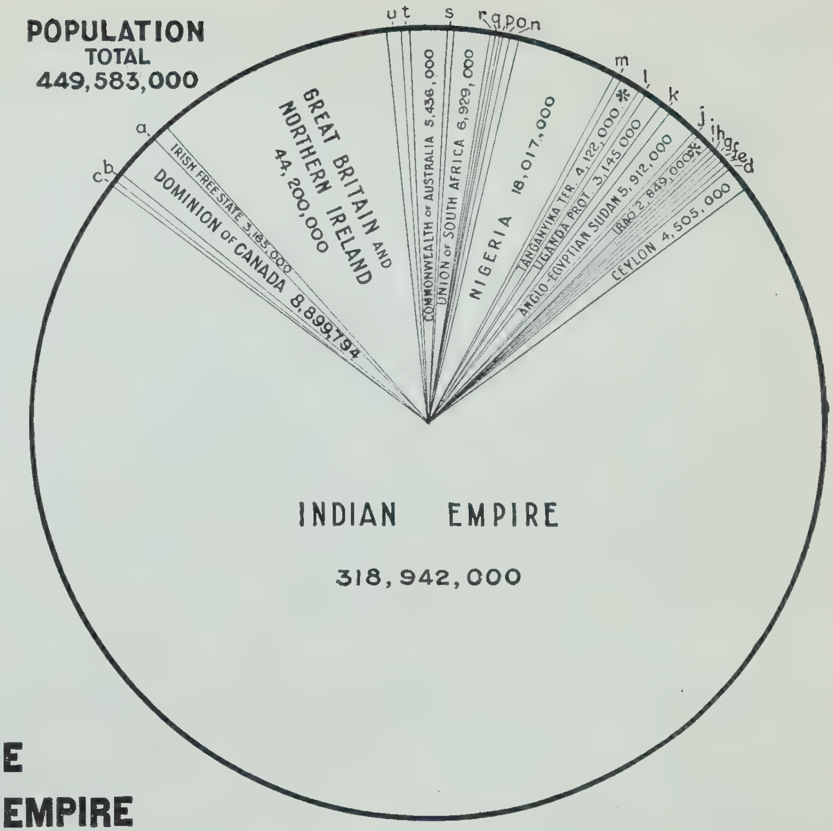
The cause of the tides is very difficult to explain. All that can be said is that the moon exerts a pulling force upon the earth. This force has no perceptible effect on the land, but it causes the water of the oceans to form a wave which sweeps over the sea. When the crest of the wave approaches shore, the tide rises, while it falls as the hollow of the wave reaches land.

Tides are important commercially for two reasons. First, because by sweeping up and down the river-mouths, or *estuaries*, they keep sand-bars from forming and closing up good natural harbors. Secondly, they make it possible for large ships to enter during high tide many excellent harbors, which at low tide are useless for navigation. A thorough knowledge of the tides is necessary for every navigator.

Helps.—What causes ocean currents? Why are they important? Trace on the map the course of the South Equatorial Current. What are the peculiar characteristics of the Gulf Stream? Describe the effects of the monsoons upon the currents in the Indian Ocean. What is the Sargasso Sea? What effect has the Labrador Current upon the east coast of Canada? What course might a vessel take in order to be carried from Europe to America and back again by ocean currents? How do currents affect climate? Why has the west coast of Canada a milder climate than the east coast? Define *tide.* How often does the tide rise and fall? What causes tides? What is the commercial importance of tides?

THE BRITISH EMPIRE





a. Irish Free State—27,000.
b. Malta and Gibraltar—124.
c. All other possessions in America—26,441.
Bermuda—19. Br. Honduras, 8598.
W. Indies—12,206. Falkland Is.—5618.
d. Ceylon—25,332.
e. Malay States not in Federation—23,486.
f. Federated Malay States—27,648.
g. Borneo, Brunei, and Sarawak—77,106.
h. All other possessions in Asia—24,110.
Straits Settlements—1600.
Hong Kong—391.
Weihaiwei—285.
Aden, Perim and Protectorate—9000.
Bahrein Islands—250.
Cyprus—3584.
*Palestine—9000.
i. Nyasaland Protectorate—37,890.

j. Somaliland Protectorate—68,000.
k. All other possessions in Br. E. Africa—1985.
Mauritius and Dependencies—809.
Zanzibar—1020. Seychelles—156.
l. Gold Coast and Protectorate—80,000.
m. Sierra Leone and Protectorate—31,000.
n.* Cameroon—31,000.
o. Other possessions in Br. W. Africa—16,734.
Gambia—4134. *Togoland—12,600.
p. Other possessions in Br. S. Africa—18,475.
Basutoland, 11,716. Swaziland—6678.
St. Helena and Ascension—81.
q. Other possessions in Australasia—19,793.
Fiji—7083. *Nauru—10.
*W. Samoa—1250. Pacific Is.—11,450.

a. Gibraltar and Malta—234,000.
b. West Indies—1,724,000.
c. Other possessions in America—630,000.
Newfoundland—253,000.
Bermuda—21,000. Br. Guiana—298,000.
Br. Honduras—45,000. Falkland Is. 3000.
d. Straits Settlements—884,000.
e. Federated Malay States—1,325,000.
f. Malay States not in Federation—1,123,000.
g. Borneo, Brunei, and Sarawak—1,000,000.
h. Hong Kong-625,000. i. Palestine-757,000.
j. Other possessions in Asia—640,000.
Cyprus—311,000.
Aden, Perim and Protectorate—55,000.
Bahrein Is.—120,000. Weihaiwei—154,000.
k. Kenya Colony and Protectorate—2,475,000.
l. Nyasaland Protectorate—1,175,000.
m. Other possessions in Br. E. Africa—971,000.
Somaliland Protectorate—344,000.
Mauritius and Dependencies—385,000.
Zanzibar—217,000. Seychelles—25,000.

n. Gold Coast and Protectorate—2,078,000.
o. Sierra Leone and Protectorate—1,541,000.
p. Other possessions in Br. W. Africa—938,000.
Gambia—200,000. *Togoland—188,000.
*Cameroon—550,000.
q. Northern Rhodesia—932,000.
r. Southern Rhodesia—804,000.
s. Other possessions in Br. S. Africa—1,017,000.
*South-West Africa—228,000.
Bechuanaland Protectorate—153,000.
Basutoland—498,000. Swaziland—134,000.
St. Helena and Ascension—4000.
t. New Zealand—1,296,000.
u. Other possessions in Australasia—1,138,000.
Papua—276,000. *W. Samoa—38,000.
*New Guinea—400,000. *Nauru—2000.
Fiji—157,000. Pacific Is.—265,000.

*Mandated Territory.

THE BRITISH EMPIRE

THE EMPIRE AS A WHOLE

Extent and Population.—The British Empire includes all those parts of the world whose inhabitants owe allegiance to the British Crown. It comprises more than a quarter of the land area of the globe—about 13,300,000 square miles of territory. Its population numbers 450,000,000—about a quarter of all the people in the world.

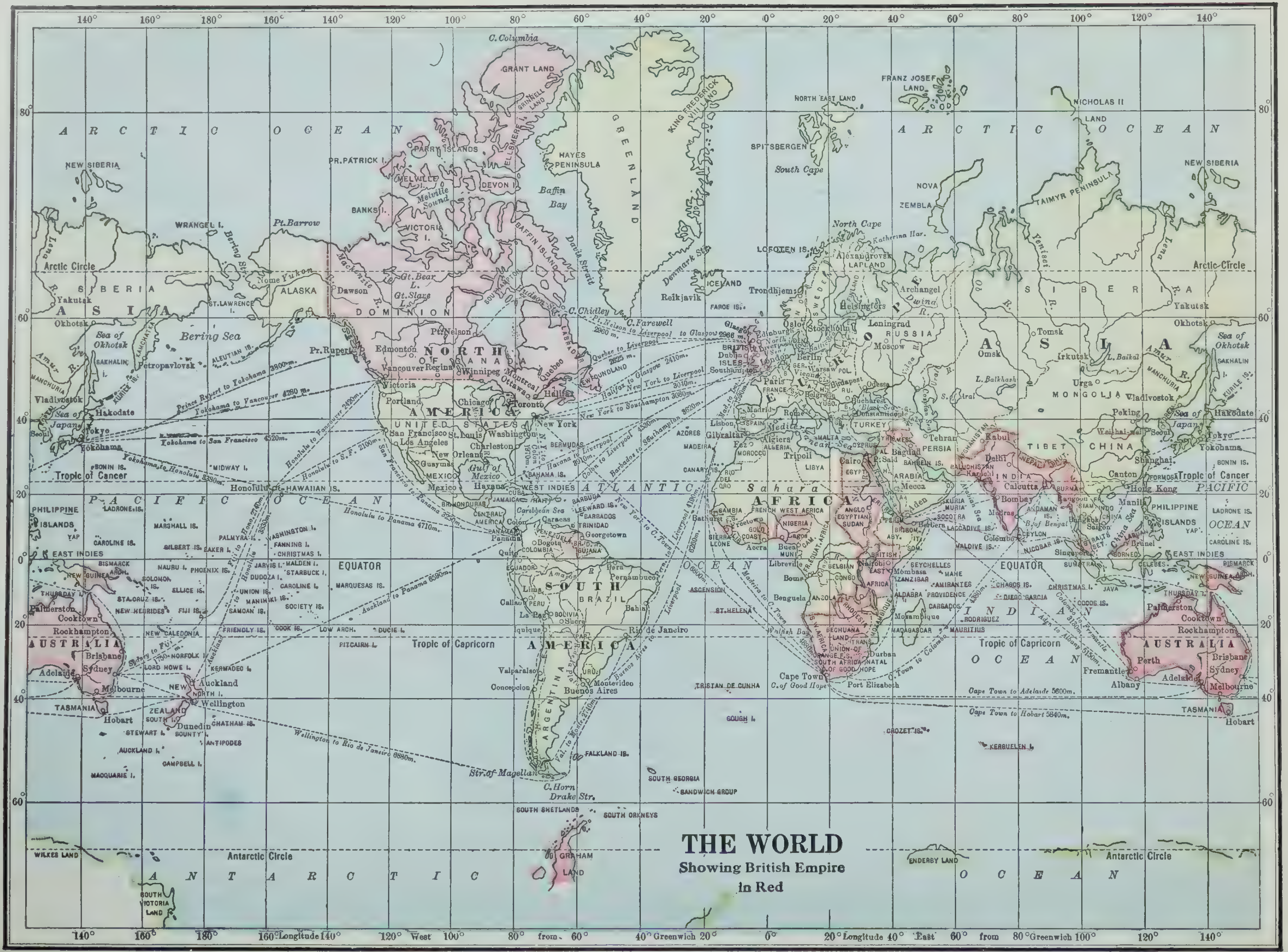
Unlike most of the great empires of the past, the British Empire is made up of many widely-separated countries and territories, varying in size from Canada, with its vast area of almost 3,700,000 square miles, to Gibraltar, less than two square miles in extent. British lands are found in every continent. British islands dot every ocean. The Empire extends from farthest north to farthest south, from farthest east to farthest west, girdling the globe with lands over which floats the Union Jack, proud symbol of power, of justice, and of freedom.

Courtesy of Raymond & Whitcomb Co.

The Houses of Parliament, London

Within the Empire is found every kind of scenery, from the snow-capped summits of the Rockies and the Himalayas to the sun-scorched plains of Australia. There is every variety of climate, from the hot, humid air of the Guinea Coast to the clear atmosphere and biting cold of the polar islands. Every type of plant grows somewhere on British soil, from the lowly moss and lichen of the tundra to the stately teak of Burma. Every kind of useful animal is found somewhere within its borders, from the dog of the Eskimos to the camel of the Arabs. Under the Union Jack live representatives of all the races of the world, from the lowest and most degraded savage to the finest type of the highest civilization.

The Centre of the Empire.—The centre of the Empire is, of course, the British Isles. The islands, though comparatively small, are the home of one of the great nations of the world. No other nation has done so much to develop commerce and to advance civilization. No other has ever had so great an influence upon the history of the world. Much of Britain's greatness is due to the character of her people, but much also is the result of the location of the islands. Before the discovery of America, Great Britain was on the sea-highway by which goods were exchanged between the countries of the north of Europe on the one hand and the countries of the Mediterranean basin and of the East on the other. After America had been discovered and settled by European peoples and after the countries of Eastern Asia had begun to trade with Europe, her position was ideal.



THE WORLD

Showing British Empire in Red

Instead of lying on the north-west edge of the known world, she was now in the centre of the Land Hemisphere and on the busiest sea-route on the globe.

The people of the islands, who had for centuries been seafaring men, were ready to take full advantage of their opportunities. They set to work to build vessels in which to trade with distant peoples and to explore the unknown places of the earth. Britain became and still remains a great ship-owning nation. Not only do her ships carry British cargoes over the Seven Seas, but they are also the carriers of much of the over-seas trade of other nations. Her enviable position in this respect is due mainly, perhaps, to two causes: first, to the fact that, being an island, she is cut off from all other countries except by sea; and, secondly, to her location, facing most of the important countries of Europe and lying directly between them and the continent of North America.

The British people have always been famous for their intelligence and energy, and for their ability and enterprise in developing manufactures and commerce. As a race they are inventive, and most of the machinery which modern factories, railways, and steamships require was first thought of and produced by them. They are also determined and persevering, opposition merely strengthening their courage and resolution. Further, they have been very successful in developing a form of government which has worked much better than that of most other countries. No wonder that, with such qualities and with the riches of coal and iron lying side by side within the islands, the British people developed into the first great manufacturing nation, and, before other nations had well begun, had grown rich and prosperous! Their wealth increased by leaps and bounds, and this wealth they used to enlarge their manufacturing plants and their merchant marine, and to assist in the development of newer countries in all parts of the world.

Not only have the British people proved themselves skilful manufacturers and traders, but they have also been adventurers, pioneers, and colonists. Our great Empire has been built up by the zeal of the British people and bound fast to the Motherland by ties of loyalty and affection. The physical strength, the spirit of adventure, and the dauntless courage, which have always distinguished the British people, have been carried by them into the new lands that they have colonized and still characterize their descendants to-day. They early developed a genius for colonization and a power of adapting themselves to conditions in new lands, which has made them, perhaps, the greatest colonizing nation that the world has ever known.

The Empire and the Sea.—The British Empire is a maritime empire. For the most part it was won by hardy British seamen, who pushed their way into the uttermost corners of the world and brought country after country under the beneficent sway of Great Britain. It was held, and still is held, largely by the power of the British navy, which has long controlled the sea-ways of the world. By far the greater part of its enormous commerce is carried in British merchant vessels, which link port with port and country with country, enabling the wheat of Canada, the wool of Australia, the tea of Ceylon, and the apples of New Zealand to reach the markets of the Motherland. Without the free use of the sea the Empire could not live.

Photo from Ewing Galloway, N.Y.

The River Front at Singapore

Singapore is one of the great strategic ports of the Empire. See page 266.

So it is that, although railways and other land communications play a great part, they are secondary in importance to the sea communications of the Empire. The merchant fleet of Britain herself is the largest and most efficient in the world, while those belonging to the great Dominions are far from small. These ships are the most important material bond uniting the far-flung domains of the King-Emperor.

To enable both the navy and the merchant fleet to accomplish their tasks, Britain has established coaling-stations all over the world. As a vessel cannot steam much more than 3,000 miles without replenishing her bunkers, there must be coaling-stations at intervals of 3,000 miles or so along the great ocean trade-routes. The Empire possesses the most complete system of such stations in the world. A British ship is sure of finding a supply of coal at almost any of the principal ports of the British Isles, Canada, Australia, New Zealand, British Africa, or India. In addition, there are facilities for coaling vessels at St. Helena, Ascension, and the Falkland Islands in the South Atlantic; at Jamaica and Bermuda in the North Atlantic; at Gibraltar, Malta, and Port Said in the Mediterranean; at Aden on the Gulf of Aden; at Colombo in Ceylon; at Singapore and Labuan in the China Sea; at Hong Kong on the Chinese coast; at Chagos, Seychelles, and Mauritius in the Indian Ocean; and at Thursday Island and Suva in the South Pacific.

A Ship passing through the Suez Canal

The Suez Canal is controlled by Great Britain. See page 191.

Nor do these exhaust the list. Many coaling-stations are tiny and apparently insignificant islands, but they play no small part in the life of the Empire. In recent years, oil has to a great extent replaced coal as fuel for ships, so that in most cases coaling-stations are oil-stations as well. The most important coaling-stations are fortified and garrisoned to protect them from attack. At many of them dockyards have been built, as at Bermuda and Hong Kong, so that ships may be repaired when necessary.

The great trade-routes of the Empire are also protected at various strategical points. For example, on the way from Great Britain to India, Gibraltar controls the entrance to the Mediterranean Sea, while Malta affords a safe harbor during the voyage to Port Said. The entrance to the Red Sea is secured by British control of the Suez Canal, and the outlet is protected by the strongly fortified peninsula of Aden. Further, during the voyage from India to Hong Kong, ships must pass through the Straits of Malacca, which is guarded at the entrance by Penang and at the outlet by Singapore.

Cables and Telegraphs.—The countries of the Empire are kept in close communication by submarine cables. There are, in the whole world, about 300,000 miles of submarine cables. Of these, almost one-half 140,000 miles—are British property. By this immense and far-reaching cable system the governments of various parts of the Empire are in constant touch with one another; commercial transactions are greatly facilitated; and in time of war valuable information is quickly sent to its proper destination. The protection of the cable system is one of the duties of the navy.

Nothing brings home the great extent of the Empire more forcibly than to trace the *All-British Cable* route around the world. Leaving the British Isles, it crosses the Atlantic, coming ashore at Trinity Bay, Newfoundland. From there it is carried overland across Newfoundland, thence by sea again to Sydney, Cape Breton Island,

and from there to Halifax, which has direct communication with Vancouver. From Vancouver a cable runs by way of Fanning Island, Fiji, and Norfolk Island to Auckland in New Zealand and to Sydney in Australia. The latter city has telegraphic connection with the cities of Albany and Perth, from which a cable traverses the Indian Ocean by way of Cocos, Colombo, Madras, Bombay, and Aden. From Aden the route lies through the Red Sea, the Mediterranean Sea, and the Atlantic Ocean, by way of Suez, Port Said, Malta, Gibraltar, and London.

Along the route of the cable are several loops or extensions. An important one from Cocos Island connects Mauritius, Durban, Cape Town, St. Helena, Ascension, and Sierra Leone. Another gives communication between Halifax and Georgetown in British Guiana, passing en route through Bermuda, Jamaica, Barbados, and Trinidad. A third from Madras links up Singapore and Hong Kong, with a branch to Port Darwin in Australia.

Nearly all these places, and many others in addition, are provided with wireless stations, which supplement the cables and add to the speed and safety with which messages can be sent. Through them it is possible to keep in touch with practically every British ship upon the ocean, no matter how far from land. More and more stations are being erected, so that within a very short time every part of the Empire, no matter how small, will be in practically direct communication with London by wireless.

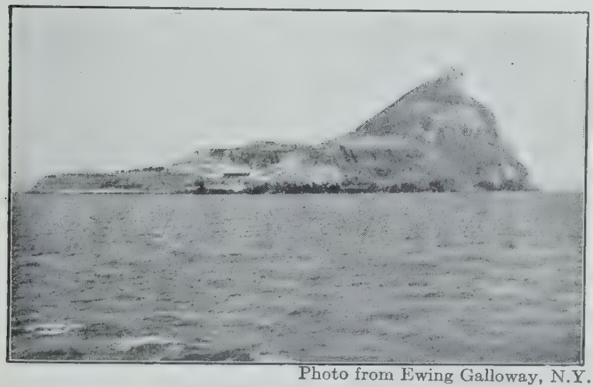


Photo from Ewing Galloway, N.Y.

Gibraltar from the South

Gibraltar controls the western entrance to the Mediterranean. See page 247.

Trade-Routes.—The commerce of the Empire follows certain routes, all centering upon the British Isles. The following are the chief:

1. From the British Isles across the Atlantic to Canada, thence across Canada and the Pacific Ocean to Hong Kong, or to Australia, New Zealand, and the numerous British islands of the Pacific. In this route the two great Canadian transcontinental railways—the Canadian National and the Canadian Pacific—play a most important part.

Courtesy of Canadian Pacific Railway.

The Central Harbor, Hong Kong

Hong Kong is the headquarters of the British Asiatic Fleet. See page 267

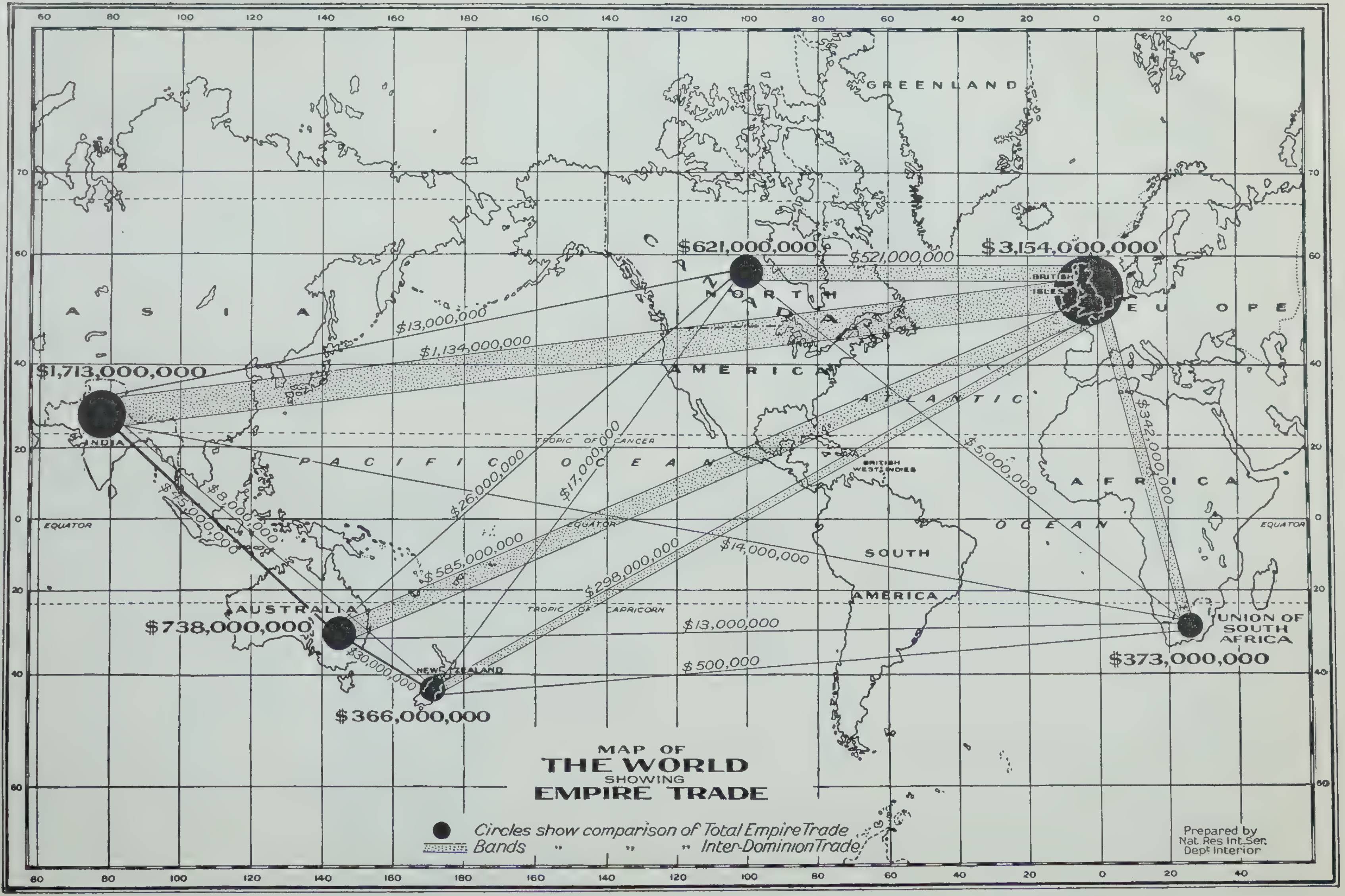
2. From the British Isles across the Atlantic and through the Panama Canal to British Columbia and to Australia and New Zealand. As the Panama Canal is owned by the United States, it is possible that this route might not always be available.

3. From the British Isles to India, Australia, and New Zealand by way of Gibraltar, the Mediterranean Sea, the Suez Canal, the Red Sea, and the Indian Ocean.

4. From the British Isles along the west coast of Africa to Cape Town, and thence across the Indian Ocean to India, and to Australia or New Zealand.

5. From the British Isles to New Zealand, or the East by way of Cape Horn, at the extreme south of South America.

In addition to the foregoing regular trade-routes, there is also direct communication between Great Britain and the various parts of the Empire not on the regular line of



MAP OF THE WORLD SHOWING EMPIRE TRADE

world travel. For example, steamers ply regularly between Britain and British Guiana; Canada has an excellent steamship service with the West Indies; while vessels from Australia and New Zealand visit at intervals the islands of the South Seas.

Government.—The countries of the Empire, aside from the Motherland, may be divided into five groups so far as government is concerned:

1. The Dominions.
2. The Indian Empire.
3. The Crown Colonies.
4. The Protectorates.
5. Mandated Territory.

The Dominion of Canada, the Commonwealth of Australia, the Dominion of New Zealand, the Union of South Africa, Newfoundland, and the Irish Free State are *Self-governing Dominions* under the Crown. Northern Ireland is also self-governing, but it differs from its sister Dominions in that it sends representatives to the Imperial Parliament at London. In the Dominions the government is modelled upon that of Great Britain, the King being represented by a Governor or a Governor-General. Each has a Parliament consisting of two Houses. Within its own sphere, the Parliament of each of the Dominions is supreme, without interference of any kind from the Imperial government.

The *Indian Empire* stands in a somewhat peculiar relation to Great Britain. It is a part of the British Empire, and the King of Great Britain is also Emperor of India. In the Imperial Cabinet there is an official known as the Secretary of State for India, who is assisted by an Advisory Council. While the Secretary and his Council have control over all matters relating to India, they do not attempt, unless under unusual circumstances, to interfere with the actions of the Indian Government. The King is represented by the Governor-General, or Viceroy, who is assisted by a Council of State and a Legislative Assembly, the latter almost wholly elective.

The actual work of government in India is carried on by the Governor-General and an appointed Executive Council. The country is divided into fifteen provinces, with a Governor or an Administrator in each, assisted by a Legislature largely composed of native members. In fact, the form of government at present in force resembles in many ways that of Canada. The endeavor is to allow the natives of India the utmost freedom possible, and to give them a large share in the conduct of government. The relations of the Indian government to the various native states differ widely. Except in matters pertaining to war and to a standing army, they are allowed largely to govern themselves, the British government being represented in each state by a Resident.

The Harbor of Calcutta

In general, *Crown Colonies* are those parts of the Empire in which, owing to an unsuitable climate or to a large native population, few Europeans make permanent homes. A few white men develop and control the resources of the country, enabling it to take its proper place in the international trade of the world. Some of the smaller Crown Colonies, however, are purely naval or military posts, important for the protection of the trade-routes of the Empire.

In every Crown Colony is a Governor, representing the King. In some cases, as in Gibraltar and St. Helena, the Governor has absolute powers. In others, as in Ceylon and the Straits Settlements, he is assisted by a Council nominated by the Crown. In a third group, which includes most of the British West Indies and Malta, the laws are made by a Legislature wholly or partly elected by the people. In every case, except in the naval and military colonies, the tendency is to give the natives an ever-increasing share of power as they show increasing ability for self-government. Eventually, many of the Crown Colonies will become self-governing.

In the *Protectorates*, such as Somaliland, Bechuanaland, and Nyasaland in Africa, the natives are ruled by their own chiefs under the supervision of British officials. Protectorates tend, as they develop, to become Crown Colonies, just as Crown Colonies, such as were formerly the states of the Australian Commonwealth, become self-governing Dominions.

At the conclusion of the Great War certain territories captured from the enemy were assigned by the League of Nations to Great Britain, France, Japan, and others of the allied powers. In this way it has fallen to Great Britain to be responsible for the government of large territories in Africa, as well as in Asia and in the South Seas. Tanganyika, Cameroon, and Togoland in Africa, and Palestine and Irak in Asia are included in these *Mandated Territories*, as they are called. For the most part these new portions of the Empire are governed as Crown Colonies.

Further, under the League of Nations the Commonwealth of Australia has control of New Guinea, the Bismarck Archipelago, and other islands in the South Pacific; the Dominion of New Zealand controls former German Samoa and other islands; the Union of South Africa has the mandate for the government of South-west Africa. In all cases of mandated territory the government must be carried on in strict accordance with certain regulations laid down by the League of Nations.

Helps.—On the map of the World on page 218 locate the various parts of the British Empire. Make a list of these under the continents to which they belong. In each continent compare their area with that of the continent as a whole. Compare their total area with that of the world as a whole. Where is the larger portion of the Empire located? Why? Is this the most important section? Give reasons. Where is the centre of the Empire? Account for the greatness of the Empire.

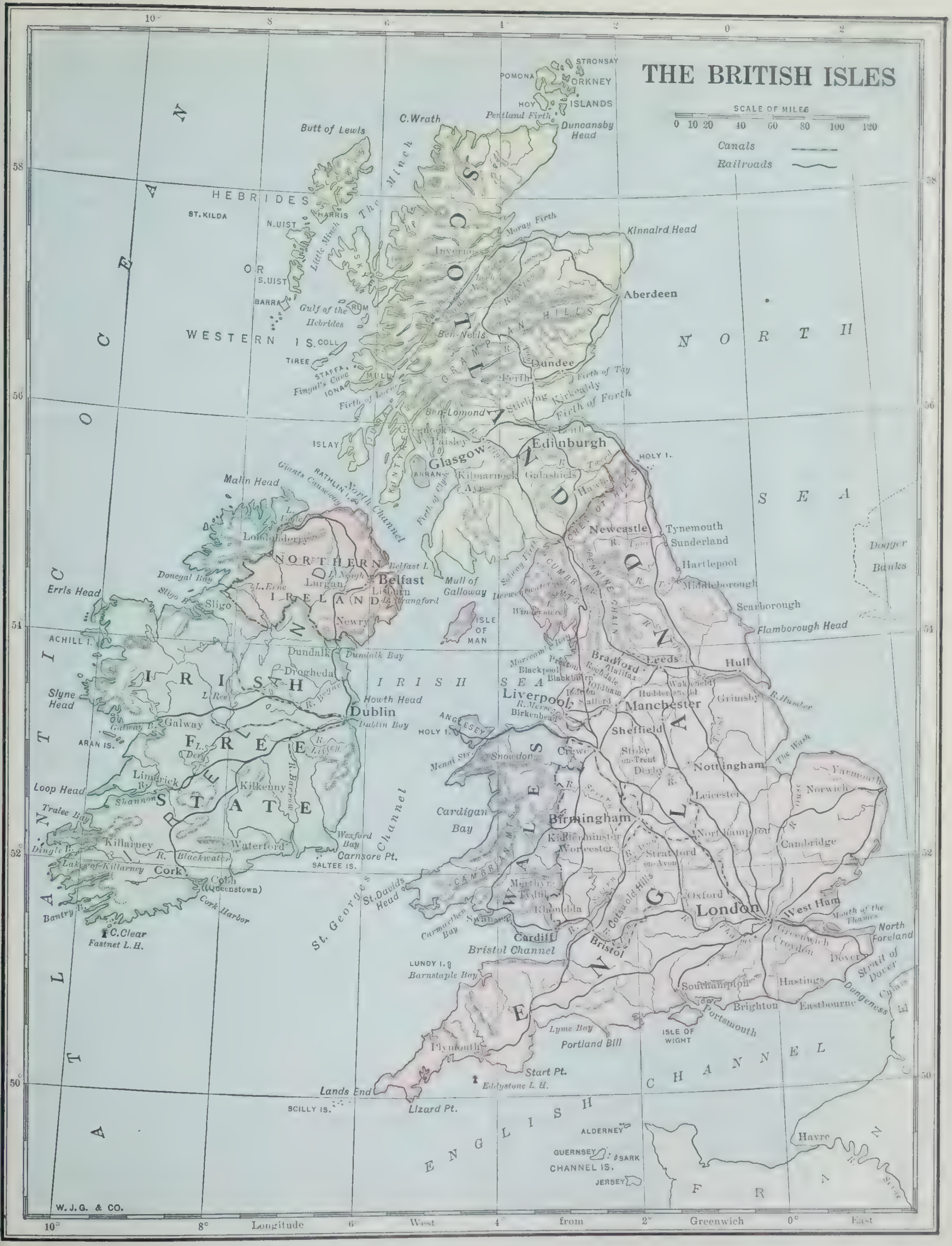
Show clearly the importance of sea-power to the Empire. How does Britain guard her lanes of commerce and her outlying possessions? What is the importance of coaling-stations, naval stations, dry-docks, cables, and wireless telegraphs in the defence of the Empire and the protection of its commerce? Trace the great trade-routes of the Empire and show the importance of each. What are the main divisions of the Empire for purposes of government? Explain each. What benefits does Great Britain derive from the colonies? What benefits do the colonies derive from Great Britain?

THE BRITISH EMPIRE IN EUROPE

The British Empire in Europe includes the *British Isles*, *Gibraltar*, at the entrance to the Mediterranean Sea, and *Malta* and the adjacent islands lying a little to the south-west of Italy in the Mediterranean.

THE BRITISH ISLES

Position and Extent.—The British Isles comprise the large group of islands lying to the west of the North Sea. They include the two large islands of *Great Britain* and *Ireland* and about 5000 smaller islands close to their shores. Great Britain, the largest of the group, contains the countries of *England*, *Wales*, and *Scotland*. This island is 600 miles in length, and varies from thirty to 260 miles in breadth. Its total area is about one-fortieth of that of Canada.



THE BRITISH ISLES

Ireland, in which are two countries—the *Irish Free State* and *Northern Ireland*—has an area only a little greater than that of New Brunswick. The total area of the British Isles is considerably less than half that of Alberta, but their population is nearly eighty times as large.

People.—The people of the British Isles are of very mixed blood, but the majority are of the Teutonic race. In the Irish Free State, in the Highlands of Scotland, in Wales, and in *Cornwall*, the population is largely Celtic. Erse, Gaelic, and Welsh, all Celtic tongues, are still spoken by many of the people living in these districts. The people of England are in the main Teutonic. So, too, are the Lowland Scots, who are for the most part descendants of Scandinavian ancestors. Many English and Scottish settlers emigrated from time to time to the northern part of Ireland, so that the people there are now largely Teutonic in blood, while in the south and west of the island they are still mainly Celtic.

The Centre of the City of London

The Bank of England is on the left and the Royal Exchange on the right.

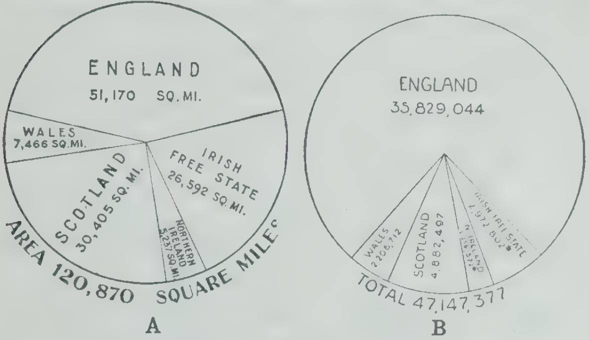
ENGLAND AND WALES

Position and Extent.—England and Wales occupy the southern two-thirds of the island of Great Britain. On the north the *Cheviot Hills* and the *Tweed River* separate England from Scotland. To the east the *North Sea* and to the south the *Strait of Dover* and the *English Channel* lie between England and the Continent. On the west *St. George's Channel* separates Wales from Ireland, and farther to the north the *Irish Sea* lies between England and Ireland. The area of England is about one-fifth that of Alberta, while the population is four times as great as that of the whole of Canada.

Surface.—From the Cheviot Hills, which extend across the island from the *Solway Firth* to the mouth of the Tweed, a central chain of low mountains stretches southward through the centre of Northern England almost as far as *Derby*. These are the *Pennine Mountains*. The range is broken here and there by valleys and rivers by which communication is maintained between the east and the west. In the north these mountains, with the hills which bank them, cover the whole width of England, so that the four northern counties are rough and hilly over practically their whole extent.

On the north-west side of the Pennines is the *Lake Country*, remarkable for the beauty of its scenery. It is circular in shape, while radiating from its centre like spokes of a wheel are long, narrow valleys in which lie the beautiful lakes which give to the district its name. The coal and iron deposits of the Pennine region have made it one of the busiest manufacturing and most densely populated districts of the world. The pure air and fine scenery of the higher parts of the mountains make them a favorite resort for those in search of health. Further to the south, in *Yorkshire*, *Lancashire*, and *Derbyshire*, a plain lies on each side of the central hills.

In the south-west is another mountainous district, covering Wales, *Devon*, and Cornwall. The *Cambrians*, as the Welsh mountains are called, are higher and more rugged than the Pennines. Even these, however, are not very lofty. *Mount Snowdon*, the highest peak in the Cambrians, is but 3,570 feet in height. The enormous masses of slate found in this region have given rise to the largest slate quarries in the world. The peninsula of Cornwall and Devon stretches out to the south-west. Its northern coast, bordering on *Bristol Channel*, with its high, steep cliffs and deep bays, is a succession of little seaside towns. On the slopes of the central part of the peninsula is much rich pasture-land and fertile soil peculiarly suited to the production of fruit. In sharp contrast with this region are the wild uplands of South Devon and Cornwall, where huge masses of granite give a desolate appearance to the whole country-side.



Area and Population of the British Isles
A. The area of the countries included in the British Isles.
B. The population of these countries.
*Provisional figures based on the census of 1926.

East of Wales and Cornwall a gently undulating plain stretches across the island right to the east coast. This southern plain has an extension to the north-west between the Cambrians and the Pennines, which reaches to the Irish Sea and is known as the *Midland Gate*. The flat surface of the Midlands has made easy the construction of the close network of railways which centre about the great junction of *Crewe*. Another extension of the plain runs northward between the Pennines and the North Sea. The great plain in the south is known as the *Southern Plain*, and its extensions northward as the *Western* and *Eastern Plain* respectively. These plains form the heart of rural England and comprise some of the finest agricultural lands in the world. There are also wide downs and moors on which one may walk for miles without finding a single fenced field. The downs are used for grazing. The hilly land of the west and north is also largely used for grazing, though much is farmed. The counties to the south and east of England yield much valuable building stone. The chalk country along this coast is very sparsely populated, except where a thick covering of clay and a plentiful supply of water make the soil fertile.

Lakes and Rivers.—The Lake Country, as has been said, is one of the most lovely districts in the world, with beautiful hills and with picturesque lakes in hundreds nestling in their hollows. *Windermere*, the largest of the lakes, is ten and a half miles long and not quite a mile broad at its extreme width. The *Leven River* drains its waters into *Morecambe Bay*. Many wooded islands dot the surface. *Derwentwater*, an enlargement of the *Derwent River*, is perhaps the most beautiful lake of all. It is three miles long by a mile in breadth and is surrounded by steep hills. It also has many wooded islands, which add much to its beauty.

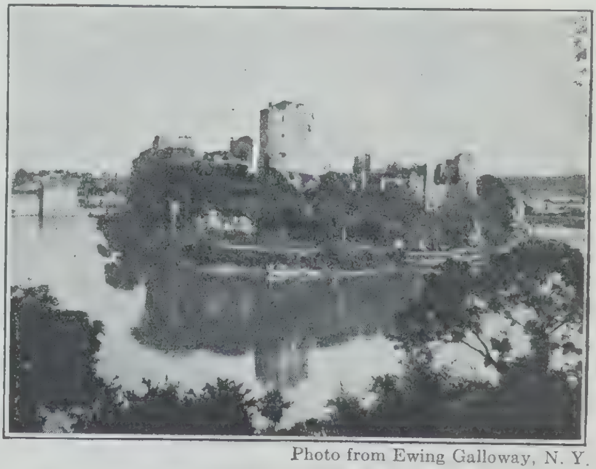
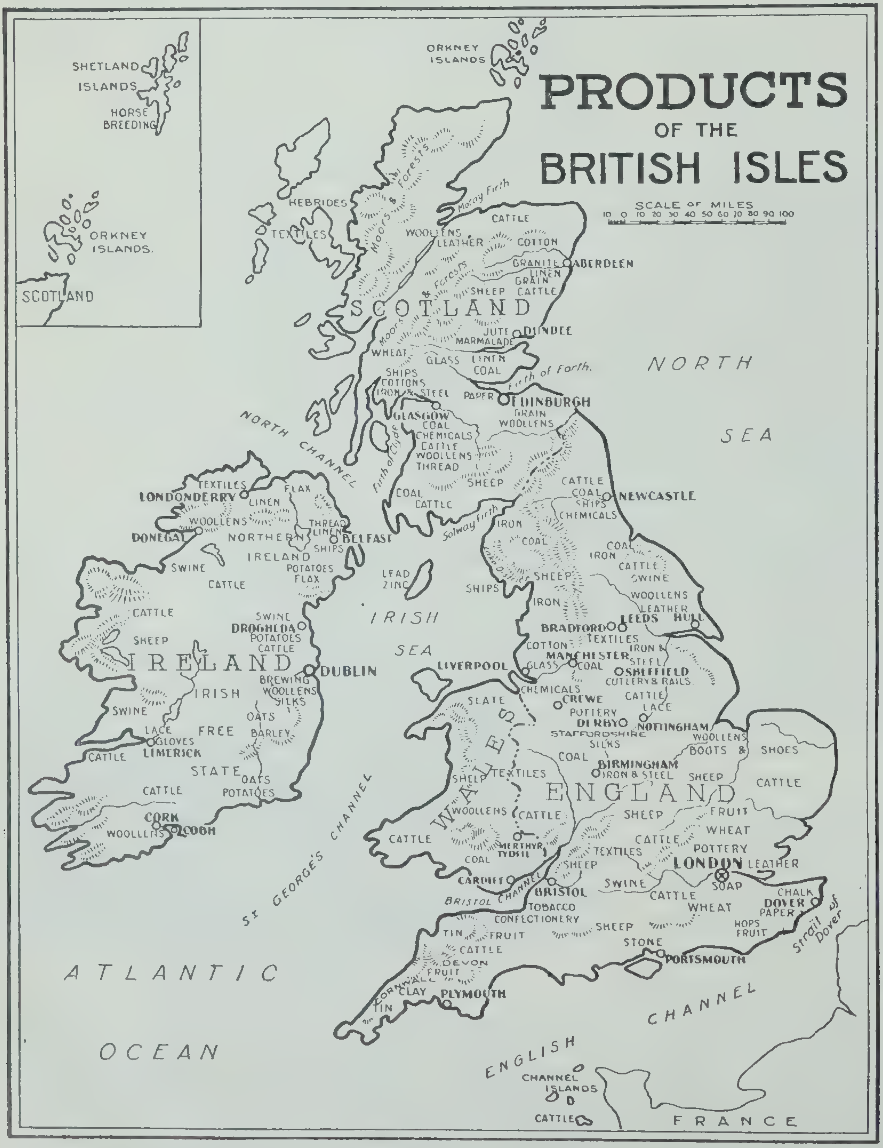


Photo from Ewing Galloway, N. Y.
Pembroke Castle
This is one of the oldest castles in Wales.

In general, as is to be expected, the rivers are small. Many, however, have been improved with canals and locks, and so made navigable for some distance inland. The most important river, the *Thames*, has its rise in the *Cotswold Hills* and flows across the southern portion of the country. Near its entrance into the North Sea, it expands into a wide estuary, six miles in width at its mouth. The river is tidal and has no delta; hence its value as a commercial waterway. There are many locks, especially in the middle reaches. The largest vessels can pass up the river for fifty miles to *London*.



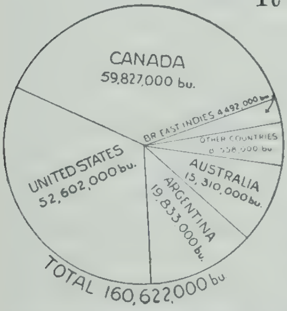
PRODUCTS OF THE BRITISH ISLES

The *Severn*, the second of the English rivers, has its source in North Wales, and after a very winding course empties into Bristol Channel. From its source to its mouth is only eighty miles in a direct line, but its entire length is 210 miles. It is navigable for barges as far as 180 miles from its mouth. The *Mersey*, seventy miles in length including its estuary, flows into the Irish Sea. The estuary is much obstructed by sand-banks, but the construction of sea-walls has made it safe for navigation. At the mouth of the Mersey is the city of *Liverpool*, one of the great seaports of England. The *Humber*, which is really the estuary of the *Ouse* and the *Trent*, varies from one to seven miles in breadth and has a length of thirty-eight miles. Its drainage basin is the largest in England. Navigation on the north side of the river is much obstructed by banks and shoals. The great port of *Hull* is situated on the north bank of the river not far from its entrance into the North Sea. The *Tyne*, which also flows into the North Sea, passes through the richest coal-mining district in England. The great manufacturing city of *Newcastle* lies on the north bank of the river.

The Coast-Line.—The east coast of England is low; so low in some parts, as in *Lincolnshire*, that embankments are necessary to prevent the inroads of the sea. The south coast also, as far as the *Isle of Wight*, is a low clay shore, broken here and there, as at *Dover*, with high chalk cliffs. To the west of this island the shore is high and steep, with many deep inlets and coves. The west coast is nearly everywhere high, bold, and rocky, and, in places, even mountainous.

The coast-line, owing to many deep inlets, is very long, and good harbors are numerous. In fact, there are more first-class harbors on any one of the English coasts than on the west coast of the two Americas south of Puget Sound. This is mainly due to the fact that the coast has sunk, letting the sea come far up into the rivers, and so forming deep and wide estuaries which reach far inland. Along the miles of river-bank open to ocean steamers excellent wharves and docks have been built. The strong tides scour these estuaries clean, so that no sand-bars can form to hinder navigation. The inlets are so long that no place in England is more than seventy miles from the sea. No other country has such wonderful natural advantages for shipping.

The discovery of America placed the west coast of England in the centre of the trading world and led to the growth of a number of large seaports in that region. Liverpool, at the mouth of the Mersey River three miles from the sea, is the third city in size in England, but it is the second seaport. Because of its location and its easy approach from the west, it is the centre for the bulk of the import and export trade with Canada, the United States, and the West Indies. It is surrounded by one of the busiest manufacturing districts in England and has many factories within its own limits. From its ports the articles made there are shipped to all parts of the world. *Bristol* and *Cardiff*, on Bristol Channel, are also important seaports, serving the manufacturing district in the south just as Liverpool serves the north.



Imports of Wheat into the United Kingdom in 1926

The chief port on the south coast is *Southampton*, which has an excellent harbor and does a large trade with the West Indies, South America, and South Africa. Near by is *Portsmouth*, which contains the government navy yards, while farther to the west is *Plymouth*, a naval station.

On the east coast, facing the leading countries of Europe, is the great seaport of London, the centre of the business world. Situated on the Thames, fifty miles from its mouth, the city may be reached by all but the very largest vessels, while at the same time it is in the interior of the island. Docks line the banks of the Thames for mile after mile, and yet the accommodation is too small for the immense number of vessels which enter the port. Hull, on the north bank of the Humber, is the shipping port for the large manufacturing district in the north-east.

Photo from Ewing Galloway, N.Y.

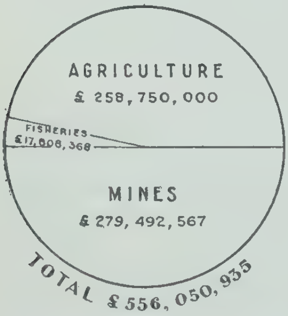
Harvesting in Surrey

On the coasts of England are many watering-places, to which the city dwellers throng at week-ends and holidays. Among the most popular of these are *Brighton*, *Eastbourne*, *Ramsgate*, *Scarborough*, *Llandudno*, *Morecambe*, and *Blackpool*.

Climate.—The moist south-west winds sweeping in from the ocean over the warm Atlantic drift temper the climate of England and Wales, making the winters mild and the summers cool for the latitude. It should be remembered that London is in about the same latitude as the southern part of James Bay in Canada. Over the larger part of the country the average temperature does not vary much more than 20° between summer and winter. The temperature is highest on the west side, and decreases steadily towards the east. Very little snow falls except on the very high ground, and the little that does fall lasts only a short time. The winters are so mild that certain vegetables, such as cabbages, can be left outdoors without being harmed by frost.

The distribution of the abundant rainfall depends upon the winds and the position of the highlands. The high western coast has more rain than the low eastern coast. At London the annual rainfall is about twenty-five inches, considerably less than the annual rainfall in Ontario or Quebec. There are, however, more rainy days and fewer days of sunshine in England than in Eastern Canada, but the rains are more gentle. The occasional easterly winds of winter are cold, since they blow from the cold continent of Europe; but the mountain ranges of the Pennines, running through the centre of the country, protect the region to the west. This accounts in part for the warmth of the winter climate about *Manchester* on the western plain.

Agriculture.—The warm, moist climate and the fertile soil make the plains of England an exceptionally fine farming country, while the hills and downs and more rugged slopes, which could not well be cultivated, furnish pasturage for cattle and sheep. Oats, wheat, barley, and rye are the principal grain crops. Wheat is grown chiefly in the eastern counties, where the climate is drier. The scarcity of land leads the English farmer to till his soil much more carefully than does the Canadian farmer. The average yield of wheat to the acre in England is thirty bushels, about twice as high a yield as that in either Canada or the United States.



Relative Production of Agriculture, Mines, and Fisheries in Great Britain in 1923

In Southern and Central England and in the Western Plain most of the farms are devoted to mixed farming and stock-raising. Hay is a most valuable crop. Immense quantities of garden vegetables are raised in all parts of the country to supply the demands of the cities and towns, while other vegetables, such as turnips and mangolds, are grown as food for stock. Hops for the local breweries are cultivated in the south-east, particularly in *Kent*. There, too, is the chief fruit-growing district, producing apples, pears, plums, and cherries. The growing of flowers for the city market is a very valuable industry.

Photo from Ewing Galloway, N.Y.

Farmers at a Country Fair in the Lake District, England

More than twice as much land, however, is devoted to pasture as to crops. The abundance of rain at all seasons makes the finest of pasturage. Cattle are extensively raised for beef, butter, milk, and cheese, while the large herds of sheep furnish wool and mutton. Sheep-raising is the chief agricultural industry in the Pennines and in Wales, where the soil is thin and poor. Many cattle are imported alive and turned out upon the English pastures to be fattened for the market.

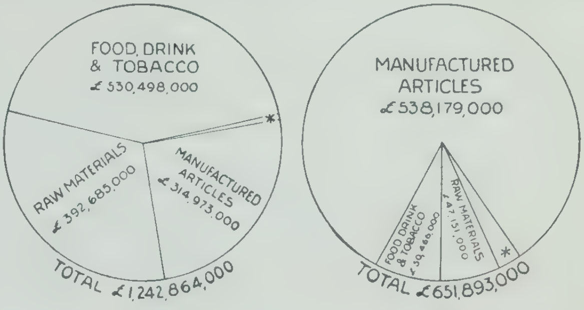
A great deal of attention is paid to the breeding of high-grade cattle, sheep, and swine. No other people have developed so many good breeds of animals—in fact, there are more British breeds of sheep and cattle and horses than there are of any other three countries of the world. Breeders all over the world purchase British stock, as it is the best obtainable anywhere. A list of common breeds reads almost like a list of British place names—Southdown, Cotswold, Shropshire, and Cheviot sheep, Suffolk and Shire horses, Durham and Hereford cattle, Berkshire and Yorkshire swine, to mention only a few. Three of the *Channel Islands–Jersey, Guernsey,* and *Alderney*—have developed three breeds of cattle that are well known in Canada.

British farmers have always paid great attention to raising good grasses, and British seed is in demand wherever there is a wish to improve the quality of the pasturage. In New Zealand, for instance, the quality of the pastures has been raised greatly by using English grasses instead of those native to the islands.

Owing to the multitude of people working in the factories and mines and to the fact that almost three-quarters of the entire population live in the cities, England produces only a small part of the food needed by her people. Much food, such as wheat, bacon, fruits, butter, cheese, poultry, and eggs, has to be imported. The Englishman, moreover, has found out that it is much more profitable to buy wheat in other countries, such as Canada, the United States, and the Argentine, and to use his own land for the production of crops which will give him a larger return for his outlay and labor. Market-gardening, therefore, has become an important industry. During the Great War, however, many woods were cut down, as the timber was badly needed, and much parkland was broken up for cultivation, so that more food-stuffs are now being produced than formerly.

The English country-side is one of the most beautiful in the world. Orderly farms, tilled like gardens; picturesque farm-houses, usually of stone with thatched or tiled roofs; green hedges, beautifully trimmed; lush pastures, always fresh and green; fat, well-kept animals in the pink of condition; all these combine to produce a most pleasing effect upon the traveller from our own newer and less developed land. The beauty of the country is enhanced by the many fine residences and castles, each with its wide lawns, its gaily colored flower-gardens, and in many cases, groves of hard-woods forming a fitting setting for the magnificent buildings which they adorn. Over all is a charming air of peace and security and quiet restfulness.

Fishing.—The British Isles are on the continental shelf of Europe, which stretches across the North Sea and westward for more than 100 miles beyond Ireland, and as far north as Iceland. These shallow waters are filled with food-fishes. The sea to the east, to the west, and to the north, is all one great fishing ground. With her many harbors, England is in a position to take full advantage of the riches which the sea thus brings right to her door. Since the Angles and Saxons first crossed the North Sea to make their homes in Britain, the English have always taken kindly to a seafaring life. This love for the sea, combined with the nearness of the island to the great fishing grounds of the North Sea, the deeply indented coast well provided with good harbors, and the large population to be provided with food, has led to the building up of a fishing industry in which tens of thousands of men are employed. The fish caught each year average more than thirty pounds per person.



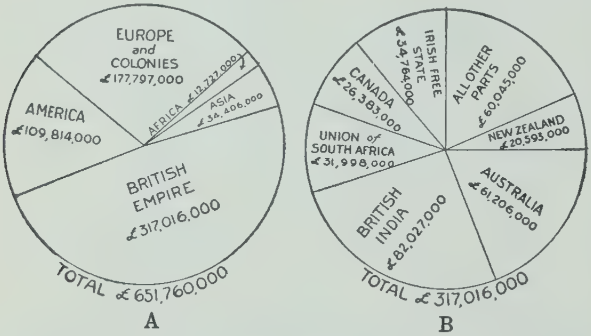
A B

Imports and Exports of Great Britain and Northern Ireland for 1926

A. Imports. *All other imports £4,707,000.
B. Exports. *All other exports £16,097,000.

Most of the fishing boats sail from ports on the east coast, although many boats operate from the harbors of Devon and Cornwall in the south and Wales and Lancashire in the west. *Grimsby*, on the Humber River, is the centre of the industry.

It is the most important fishing town in the world. *Yarmouth,* which sends out a great fleet to catch herring, is only a little behind. The English boats are mainly large trawlers or drifters. The trawler tows along behind it a large funnel-shaped net, called an otter-trawl, which skims along close to the bottom and catches great quantities of fish. Most of the cod, haddock, and plaice are caught in this way. The drifter sets out a drift-net, which forms a wall of netting some thirty feet deep and perhaps two miles long. The drifters catch mainly herring and mackerel. The fishing vessels go far out into the Atlantic; many go even to the shores of Iceland, but the chief fishing grounds are over the *Dogger Bank* in the North Sea. In addition to those already mentioned, many other varieties of fish, such as sole, flounders, and eels, are caught.



Value of Exports of the United Kingdom for 1926
A. To the continents named. B. To the Empire.

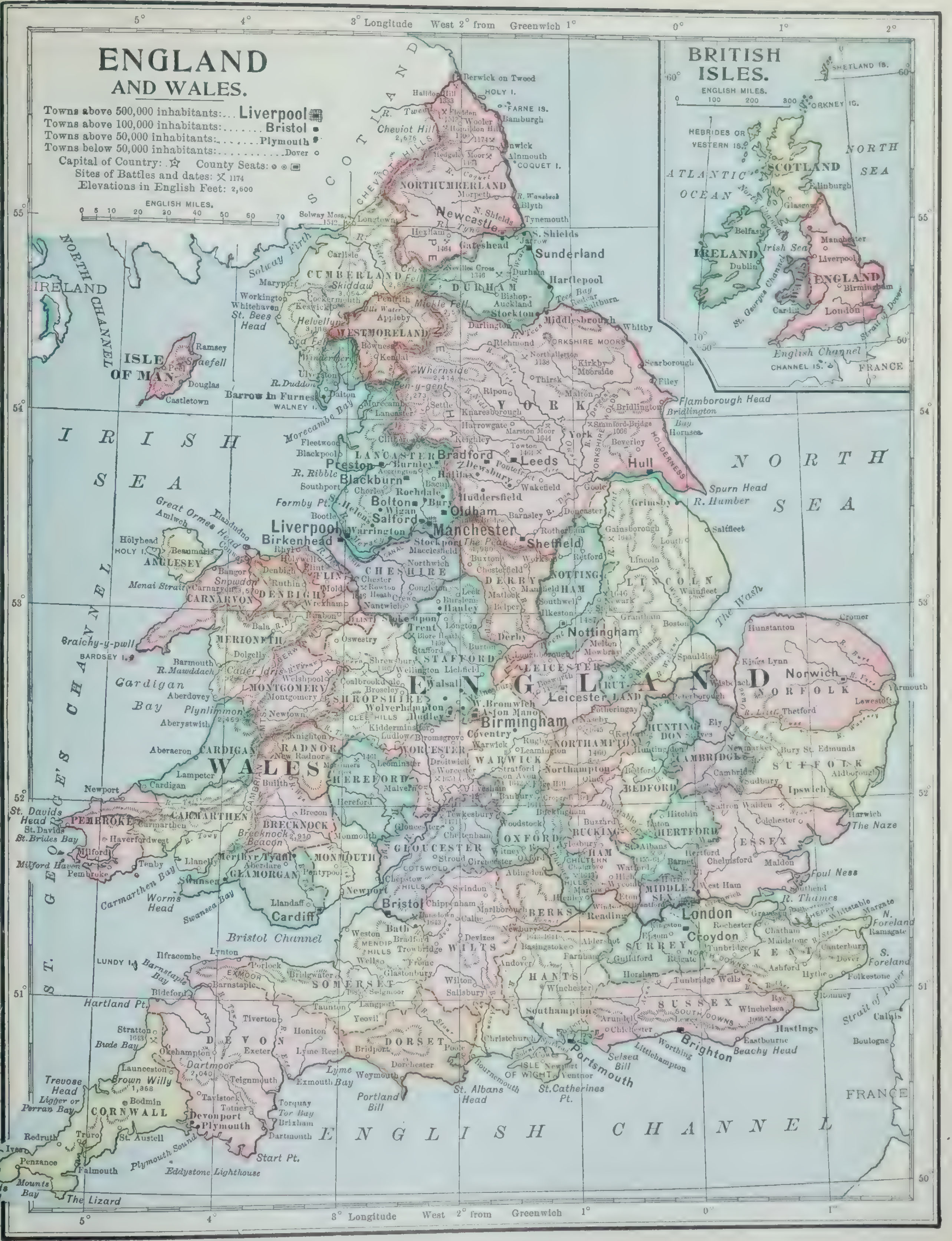
Minerals.—Coal and iron, the two minerals most necessary for manufacturing, are abundant in England, and are found so close together that in some cases the same shaft is used to bring the coal and the iron ore to the surface. They are also near deposits of limestone, which is needed in the smelting of iron ore. Coal is found principally in the valleys of the Severn and Trent Rivers, in South Wales, and in the districts about Newcastle and Manchester in England. As England has comparatively little water-power, the importance of the coal fields to her industries can scarcely be exaggerated.

In addition to the immense amount used at home in thousands of factories, great quantities of coal are sent to other countries as ballast in vessels, which bring back food products and the necessary raw material for manufacturing. As no ship can carry more than a few days' supply of coal, large quantities are shipped from England to the various British coaling-stations throughout the world to provide fuel for the navy and for the thousands of ships in the British merchant marine. Coal is the only raw product of England and Wales which is produced in greater abundance than is needed for home use. Newcastle, on the Tyne River, exports great quantities of coal, while Cardiff, in Wales, ships more coal abroad than any other port in the world.

The chief iron deposits are found in Central and Northern England, the most important fields being in *Cumberland,* North Lancashire, and Yorkshire. Large as these are, their output is not enough to provide sufficient material for England's great iron industry, and much iron ore has therefore to be imported, chiefly from Spain and Sweden. The centre of the iron industry is *Birmingham,* the second city in size, which lies in the midst of the *Black Country,* so called because of the great volumes of smoke continually pouring from the chimneys of the almost countless factories. The manufactures include machinery of all kinds, steel ships, locomotives, steel rails, chains, cables, anchors, automobiles, bicycles, cutlery, tools, screws, nails, and pens. *Sheffield* is noted for its cutlery and steel rails, and for grindstones, the material for which is found in quarries near at hand. It has also a huge factory for the making of armor-plate for battleships. *Merthyr Tydfil,* in South Wales, has many blast furnaces.

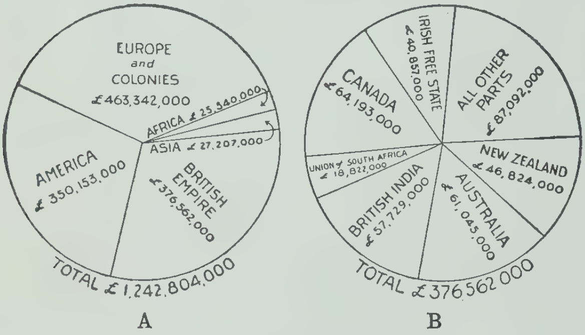
The building of steel ships is an industry of first importance in England. The principal yards are at Newcastle, *Tynemouth, South Shields, Hartlepool, West Hartlepool, Sunderland,* and *Middlesbrough,* all in the north-eastern district. *Barrow,* on the north-west coast, also has extensive yards.

The export trade of England in steel goods is also very large. Entire railways in Africa, in China, in South America, with


ENGLAND
AND WALES.
Towns above 500,000 inhabitants: Liverpool
Towns above 100,000 inhabitants: Bristol
Towns above 50,000 inhabitants: Plymouth
Towns below 50,000 inhabitants: Dover
Capital of Country: ☆ County Seats: ○ ◎ ▣
Sites of Battles and dates: ✕ 1174
Elevations in English Feet: 2,600
ENGLISH MILES. 0 5 10 20 30 40 50 60 70
3° Longitude West 2° from Greenwich 1°
BRITISH ISLES.
ENGLISH MILES. 0 100 200 300
SHETLAND IS.
ORKNEY IS.
HEBRIDES OR WESTERN IS.
ATLANTIC OCEAN
NORTH SEA
SCOTLAND
IRELAND
ENGLAND
CHANNEL IS.
FRANCE
English Channel
SCOTLAND
CHEVIOT HILLS
NORTHUMBERLAND
CUMBERLAND
DURHAM
WESTMORELAND
YORK
LANCASTER
CHESHIRE
DERBY
NOTTINGHAM
LINCOLN
ISLE OF MAN
IRISH SEA
NORTH CHANNEL
IRELAND
ANGLESEY
CARNARVON
DENBIGH
FLINT
MERIONETH
MONTGOMERY
CARDIGAN
RADNOR
WALES
PEMBROKE
CARMARTHEN
BRECKNOCK
GLAMORGAN
MONMOUTH
SHROPSHIRE
STAFFORD
LEICESTER
RUTLAND
ENGLAND
NORFOLK
SUFFOLK
CAMBRIDGE
HUNTINGDON
NORTHAMPTON
WARWICK
WORCESTER
HEREFORD
GLOUCESTER
OXFORD
BUCKINGHAM
BEDFORD
HERTFORD
ESSEX
MIDDLESEX
BERKS
WILTS
SOMERSET
DORSET
DEVON
CORNWALL
HANTS
SURREY
KENT
SUSSEX
ISLE OF WIGHT
ST. GEORGE'S CHANNEL
Cardigan Bay
Bristol Channel
NORTH SEA
The Wash
ENGLISH CHANNEL
FRANCE
Strait of Dover
Newcastle
Sunderland
Liverpool
Manchester
Birmingham
Bristol
London
Leeds
Bradford
Sheffield
Hull
Nottingham
Leicester
Plymouth
Portsmouth
Brighton
Cardiff
Norwich
Croydon
Land's End
The Lizard

their rails, their locomotives, their cars, and their bridges, have been produced in English factories. In heavy machinery Britain leads the world, not even the great steel plants of the United States being able to compete with her in the quality of her product. In addition to the steel ships which she builds for British ship-owners, she builds many for foreign countries. Her exports of hardware for building purposes, of plumbing fixtures and iron pipe, are also very large.

It was the presence of tin that first induced the ancient Phoenicians to visit England, and tin is still mined to some extent, though a great quantity is also imported. Some copper is found in North Wales and Cornwall, but the production is not large. There is practically no mining of lead and zinc. In South Wales, at *Swansea* and Cardiff, are large smelters, in which imported iron, tin, copper, and zinc ores are treated. Tin plate is produced there in very large quantities. Slate, granite, salt, and excellent clay for the manufacture of pottery are found in many parts of the country. In South-eastern England is a large deposit of chalk, which is used for making cement.



Value of Imports of the United Kingdom for 1926

A. From continents named. B. From the Empire.

Manufacturing.—While farming, fishing, and mining are important industries in England, the great majority of her people are engaged in manufacturing and trade. The situation of England makes it possible for raw materials to be brought to her ports easily and cheaply by water, and for her manufactured products to be shipped to other countries. Her climate, with its moist air and equable temperature, is favorable to the growth of a heavy fleece on the sheep and is ideal for spinning and weaving cotton and wool. As we have seen, she has ample supplies of coal and iron. Consequently, the chief manufactures are cotton, woollen, and steel goods. More than three and a half million people are actually employed in these three industries alone, chiefly in the large cities near the coal and iron fields.

A very large part of the world's supply of cotton goods is made in England, and yet all the raw material—about one and a half billion pounds a year—has to be imported. The raw cotton comes largely from the United States, Egypt, India, the West Indies, the west coast of Africa, and Brazil. Most of the cotton factories are located in Lancashire, the home of the industry. There the moist climate is favorable to spinning, for in dry air the cotton is in danger of becoming too brittle to weave and spin easily. As Lancashire is on the coast of the Irish Sea, facing the west whence most of the raw cotton is obtained, the raw material may be easily shipped in and the manufactured fabrics easily shipped out through Manchester and Liverpool. Manchester, though inland, is connected with the mouth of the Mersey by a ship-canal, built so that the manufactures can be shipped direct by sea, thus avoiding the expense of the rail haul to Liverpool and the unloading and re-loading there.

Manchester is the greatest cotton market in the world, and around it are grouped many towns and cities, all busily engaged in spinning cotton thread and weaving cotton fabrics of every kind. The chief of these are *Blackburn*, *Oldham*, *Bolton*, and *Rochdale*, while *Nottingham* is the centre of the machine-made lace industry. The English were the first to invent cotton-spinning machinery, which gave them at once a supremacy over other countries. This supremacy has been held ever since. Much of the cotton cloth made is sold in the home market, but far greater quantities are exported to almost every country in the world. India, in particular, uses enormous quantities of

Lancashire cottons and is the largest customer that England supplies. Other tropical countries are also heavy purchasers.

England has about 17,000,000 sheep on her pastures. From these millions of pounds of the finest of wool are obtained, and yet of the 700,000,000 pounds of wool used each year in the mills of Great Britain seven-eighths is imported, principally from Australia, New Zealand, the Argentine, and South Africa. The woollens turned out from the mills include broadcloths, worsted, tweeds, cashmeres, merinos, carpets, blankets, underwear, hosiery, and yarn. English woollens are unexcelled and are used everywhere in the world where goods of high quality are in demand. The chief woollen mills are in Yorkshire, just across the Pennines from the Lancashire cotton area, as this is the chief sheep-grazing district and is well supplied with coal and water-power. *Bradford* and *Leeds* are the chief centres of the industry, but *Halifax, Huddersfield*, and *Wakefield* are of importance. There are also large woollen mills in London and the vicinity. *Kidderminster* is the chief seat of the carpet industry.

As almost all the leather goods, including boots and shoes, gloves, saddlery, harness, and belting, used in England are of home manufacture, the leather industry is very large. London and Leeds are the chief centres, but *Northampton, Norwich*, and Bristol have many boot and shoe factories. In addition to the home supply and the hides from imported cattle slaughtered for food purposes, immense numbers of hides are brought in, chiefly from Australia, South Africa, and the Argentine. The paper industry is also of great value, the raw material in the shape of wood-pulp being imported from Sweden, Finland, Newfoundland, and Canada. Many of the largest paper-mills are in Kent. The finished product is exported mainly to India, Australia, New Zealand, and South Africa. At the same time England imports large quantities of newsprint from Canada and Newfoundland.

The manufacture of china and earthenware is carried on in the Potteries, a district in *Staffordshire* near the coal fields at the source of the Trent River. The kaolin, or china clay, is brought by canal from Cornwall through the mouth of the Mersey. In addition, porcelain of a particularly high grade is manufactured at Derby, *Worcester*, and London. Glassware of all kinds, both coarse and fine, is largely manufactured. The linen industry is small compared with that in Ireland and Scotland, and silk-weaving has not reached large proportions. The centre of the artificial-silk industry is at Leicester, which specializes in hosiery and knit-goods.

Photo from Ewing Galloway, N.Y.

A Cotton Mill at Preston

Note the canal running between the buildings.

Almost all the furniture required in England is made in the home factories, largely from imported lumber. Brewing gives employment to numbers of people, while jams, marmalades, pickles, and sauces are produced in large quantities both for the home market and for export. Soap, made mainly from palm-oil and coconut-oil from West Africa and the islands of the Pacific, is another valuable product. Other important manufactures are sugar, tobacco, confectionery, rubber goods, dyes, and chemicals of many kinds. The building of wooden ships is still another valuable industry.

Transportation.—England is well provided with railways, the total mileage of the island being a little over 16,000 miles. All the principal cities and towns are connected by rail, and there are many branch lines running into the outlying mining and industrial districts. Great care is taken with the road-beds, so that trains are able to travel at a rapid rate. The rivers and canals also provide easy transportation. Many of the larger rivers are connected with one another by canals. The total length of canals in England is 3,640 miles.

The greatest of all the English canals is the *Manchester Ship Canal*, which connects Manchester with Liverpool. It is almost thirty-six miles in length, with a depth of twenty-eight feet. The entrance lock is eighty feet wide, but the maximum width of the other locks is only sixty-five feet. The canal connects with all the principal railways and barge canals in England. The *Trent and Mersey Canal* runs from the headwaters of the Trent through the Potteries to the *Bridgewater Canal*, and so to the Mersey. The *Leeds and Liverpool Canal*, with connecting links, joins the headwaters of the Humber and the Mersey. The *Liverpool and Bristol* connects the Mersey with the Severn. These, with a host of smaller canals and the canalized rivers, make up the inland navigation of England.

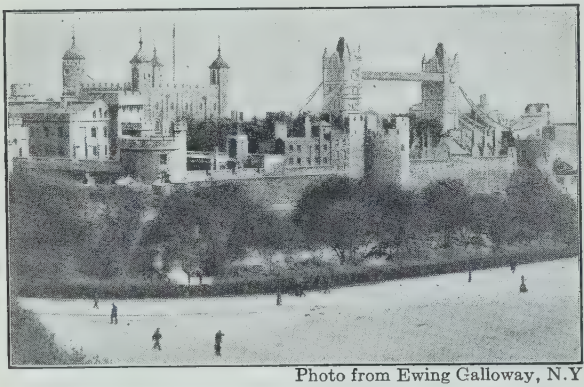


Photo from Ewing Galloway, N.Y.
Picturesque London—Tower of London and Tower Bridge

The canals, however, are not so generally useful as might be expected. There is a lack of uniformity in the size of the locks and the depth of water which makes their use in many cases very inconvenient. Further, there is little attempt made to arrange for through traffic, thus causing delay and expense to the shipper. Again, many of the canals are sadly neglected and have been allowed to fall into a state of hopeless decay.

Trade and Commerce.—The exports and imports of England are enormous. She imports raw materials of all kinds, such as cotton, silk, wool, timber, hides, tobacco, wood-pulp, rubber, oil, and everything that enters into manufacture of every kind. She also imports grain, vegetables, dairy products, and everything required to feed her large population. On the other hand, her exports consist principally of manufactured articles of all kinds, such as cottons, woollens, linens, carpets, iron and steel goods, heavy machinery, paper, pottery and china, glassware, chemicals, and musical instruments. Her ships visit every port in the world carrying to them her manufactured goods and bringing back the raw materials for her factories.

Cities and Towns.—Many of the large and important cities of England and Wales have been mentioned in connection with the industries with which they are particularly associated. A few additional details may be added regarding some of the largest and best-known. *London*, with its splendid harbor afforded by the estuary of the Thames, is situated at almost the centre of the Land Hemisphere. Its situation in relation to Europe, America, and the great manufacturing districts of England, together with the vast number of factories within its bounds, have made it the financial and commercial centre of the world. These advantages account for its enormous population, almost as great as that of our whole Dominion. The city has also a large transshipment trade. Its great importing houses bring in enormous cargoes of tea, coffee, sugar, spices, rubber, and other products and distribute them through the British Isles and the continent of Europe.

London has many public buildings which are the admiration of the world—the Houses of Parliament, the Law Courts, St. Paul's Cathedral, Westminster Abbey, the British Museum, the Tower of London, the National Art Gallery, the University of London, and many others. The Zoological Gardens and the Kew Botanical Gardens are a never-ending source of interest to the visitor. All these, together with the almost endless docks, which stretch along the river for miles, make London one of the most interesting cities in the world.

Near London is *Greenwich*, where is located the Observatory from which we regulate our time and from which our meridians of longitude are numbered. Near by, too, is *Windsor Castle*, one of the residences of the royal family.

Birmingham, in the north-western section of *Warwickshire*, has a very picturesque situation on two small rivers. It is, of course, a manufacturing city, but it has many handsome public buildings, including the Town Hall, the Market Hall, and the Corn Exchange. It has also many museums, art galleries, libraries, and schools, and is the seat of the University of Birmingham. *Liverpool* is splendidly equipped as a seaport, having along the Mersey about seven miles of docks. Seven railways enter the city, five of them through tunnels. Water is brought from a distance of forty-five miles, and there is a very complete sanitation system. The public buildings are magnificent. The city is the seat of the University of Liverpool.

Manchester, thirty-one miles east of Liverpool, is situated on the *Irwell River*. It has a number of beautiful public parks and many handsome public buildings. Water is brought from a distance of a hundred miles. The University of Manchester is located there. *Leeds*, in the valley of the *Aire River* in Yorkshire, is the fifth city in size in England. The University of Leeds is one of the most famous in England. *Canterbury*, *York*, *Winchester*, *Lincoln*, *Peterborough*, *Durham*, and *Exeter* are famed as the seats of magnificent cathedrals, noble specimens of architecture. *Oxford*, the oldest University town in England, with its stately colleges, its castle, and its cathedral, is the home of classical learning, as *Cambridge* is the home of mathematical training. *Stratford*, in Warwickshire on the *Avon River*, is the birthplace of William Shakespeare, the greatest dramatist that the world has ever known.

The English Islands.—In the Irish Sea, thirty miles from the coast of England, lies the *Isle of Man*, a mountainous island with an area of 221 square miles. The inhabitants of the island, known as Manxmen, are descendants of the Celts, but the Celtic language is passing out of use. Agriculture and stock-raising are carried on in the valleys, and some copper, lead, and zinc are mined.

The *Isle of Wight*, with an area about two-thirds that of the Isle of Man, lies about two miles from the south coast, from which it is separated by the *Solent*. Its beautiful scenery, fine roads, and pleasant climate attract summer visitors in large numbers. There are many interesting historical ruins and numerous ancient castles scattered over the island.

Off the north-west coast of France are the *Channel Islands*, a group of small islands, the most important of which are *Jersey*, *Guernsey*, *Alderney*, and *Sark*. The entire area of the group is seventy-five square miles, and the population is almost one hundred thousand. Although the islands have belonged to England since the time of William the Conqueror, the people still retain most of their old French laws and customs, and speak a dialect of the French tongue. Potatoes, fruits, and dairy products are shipped to England. The islands are noted for their cattle. As the scenery is beautiful and the climate delightful, the Channel Islands are a favorite summer resort. *St. Helier*, on the island of Jersey, is the chief town. All the islands are strongly fortified.

SCOTLAND

Position and Extent.—Scotland occupies the northern one-third of the island of Great Britain. On the south the Cheviot Hills and the Tweed separate it from England. On the south-west it is separated from Ireland by the North Channel, while the North Sea lies to the east. Scotland is about one-ninth as great in area as Alberta and has a population of about five millions.

Surface.—The surface of Scotland falls into three well-marked divisions—the *Southern Uplands*, the *Lowlands*, and the *Highlands*. The southern part of the country as far north as the mouth of the *Firth of Clyde* on the west and almost to the south shore of the *Firth of Forth* on the east is included in the Southern Uplands. The surface is a low plateau, with many deep valleys worn by the rivers. Even the elevations are flat-topped and covered with grass, while the valleys are fertile farm-lands. Although not so densely settled as the Lowlands, the Southern Uplands contain a greater number of people than the Highlands.

Ellen's Isle, Loch Katrine

Between the Southern Uplands and the Highlands lies a lowland plain, which stretches across the country from coast to coast. This great central plain, known as the Lowlands, is interrupted by hills, but the land is exceedingly fertile. There, also, are the great coal fields. It is in this section that the majority of the people live.

In the north are the Highlands, a region considerably larger than either the Southern Uplands or the Lowlands. The Highlands are an ancient granite plateau, which has been worn into hills and valleys by the mountain rivers. The ridges between the valleys are sharp and craggy on the west side of the Highlands, for there the rainfall is heaviest, and the streams have worn down wide valleys. On the east side the mountains are not so steep and are often flat-topped. The *Grampian Mountains*, which form the southern part of the Highlands, contain *Ben Nevis*, nearly 4500 feet in height, the highest mountain in the British Isles.

The underlying rock over the whole of the Highlands is hard granite, which weathers very slowly and forms an unproductive soil. Much of the district is heath, and much is rough rock with scattered trees, so that only a small area, found chiefly in the river valleys on the east, is suitable for farming. Many large tracts in the Highlands are owned by wealthy people, who use them only for hunting and holidaying. The population is naturally small, and the settlements are thinly scattered. It is extremely difficult for the farmers to wring a scanty living from the poor soil of this part of Scotland.

Rivers and Lakes.—The watershed of Scotland is near the west coast; accordingly, the rivers flowing towards the east are much longer than those flowing westward. The *Clyde*, however, which flows in a westerly direction, is the most important commercial river in Scotland. About one-third of the total population lives along its banks. From its source to its entrance into the Firth of Clyde is 106 miles. The Tweed, which for a part of its course forms the boundary between England and Scotland, is a noble stream, nearly a hundred miles in length. It is famous not only for its historical associations but also for its excellent salmon fishing. The *Forth*, which flows into the Firth of Forth, is another important river, as is the *Tay*, which drains nearly the whole of *Perthshire*. The latter carries a greater volume of water than any other river in Great Britain.

The scenery of the Highlands is so magnificent that each year more and more visitors are attracted to the country. The rugged mountains, the secluded valleys and glens, the hillsides covered with heather and broom, the rocky inlets and islands along the coast present a picture which, once seen, is never forgotten. Most picturesque of all, perhaps, are the lakes which nestle in the valleys between the mountains. Many of these, such as *Loch Lomond*, *Loch Katrine*, *Loch Shiel*, and *Loch Maree* are of rare beauty and loveliness.

Coast-Line.—The coast of Scotland is so indented by arms of the sea, or firths, that no part of the country is more than forty miles from the ocean. On the east coast the land slopes gradually to the beach, or to the bordering cliffs, and the shores are generally low and are cultivated to the tidal line. The Firth of Forth, with its two ports of *Leith* and *Kirkcaldy*, forms a very fine natural harbor on the east coast, and makes trade with the countries of continental Europe easy. On the west, the coast is bold and picturesque, jutting out here and there to form deep inlets and long peninsulas. The Firth of Clyde is a wonderful natural harbor, through which passes to the port of *Glasgow* a very heavy trade with Canada, the United States, and other countries.

The many hundreds of islands off the west coast of Scotland are usually included under the *Inner* and *Outer Hebrides*. The largest of the Inner Islands are *Skye*, *Mull*, *Iona*, *Staffa*, *Islay*, and *Arran*, while *Lewis*, *North* and *South Uish*, and *St. Kilda* are included in the Outer Islands. Four-fifths of the islands are uninhabited. They are for the most part given up to sheep-pasture. Lying to the north of Scotland are the *Orkney Islands* and the *Shetland Islands*. The Orkneys are a group of about ninety small islands, fewer than one-third of them inhabited. They are low-lying and treeless. The people are engaged in agriculture and fishing. The Shetlands include about one hundred islands, somewhat more rugged than the Orkneys and also treeless. The chief industries are fishing and cattle-raising. The Shetlands are celebrated for their ponies.

Climate.—In the Lowlands the climate in summer is not so warm as that of England, and in winter it is colder. The western part of the country has a greater rainfall and is milder in the winter and cooler in the summer than the region to the east. The Highlands, with their greater altitude and higher latitude have the most severe climate found anywhere in the British Isles. The rainfall is so great and the summers are so cool on the islands to the west that sometimes the crops cannot mature.

Agriculture.—The soil of the Lowlands is very fertile and is well cultivated. It produces fine crops of oats, barley, wheat, potatoes, and turnips, especially in the east, where the climate is drier and the summers are warmer. Stock-raising and dairying is more important in the west, where the heavy rainfall produces the finest of pasturage. The Highlands are famous for cattle and the Southern Uplands for sheep. Oats and barley are grown in the fertile valleys of the Southern Uplands and also in scattered sections of the Highlands. Only about one-fourth of Scotland, however, is under cultivation, as the rocky surface of the greater part of the country makes farming impossible. Scotland, therefore, like England, has to import large quantities of foodstuffs.

Photo from Ewing Galloway, N.Y.

Shearing Sheep in the Highlands of Scotland

The Highland sheep are smaller than those in the South.

Fishing.—The fisheries, as in England, are a source of great wealth to the people. The coast of Scotland on both sides is a succession of good harbors, and splendid fishing grounds are found to east, to north, and to west. As in England, however, the fishing on the east coast is the most important. Herring, haddock, and cod are caught off the coast and in the deep-sea fishing grounds, while salmon abound in the rivers. Many Scottish seamen sail to the Arctic Ocean to capture whales and seals. The people living near the coast in the Highlands eke out a living by combining fishing in a small way with farming. *Aberdeen* is the great fish centre in Scotland, shipping herring in immense quantities both to England and to the continent. *Dundee* used to be the home port of a large fleet of whalers and sealers, but of late years this industry has declined greatly, though Dundee is still an important fishing town.

Manufacturing.—All that we have said in regard to manufacturing in England may be applied equally to the Lowlands of Scotland. Immense quantities of iron and coal are found close together. One large coal field is in the west near the Clyde River; another is in the eastern Lowlands on both sides of the Firth of Forth. The eastern field has recently been extensively worked, and manufacturing is therefore increasing rapidly in that district. The western field, however, has been long developed, and around it is the great manufacturing area in Scotland. As a consequence of the abundance of fuel with which to keep the wheels turning, great steel, woollen, cotton, linen, leather, jute, and hemp factories have sprung up. The Clyde is the centre of the iron industry. There ship-building flourishes. Clyde-built vessels are found everywhere in the world, and are noted for their staunchness and worth. There are numerous distilleries and breweries scattered over the whole country. Other manufactures are sugar, paper, gloves, shawls, glass, jams, and marmalade.

Photo from Ewing Galloway, N.Y.

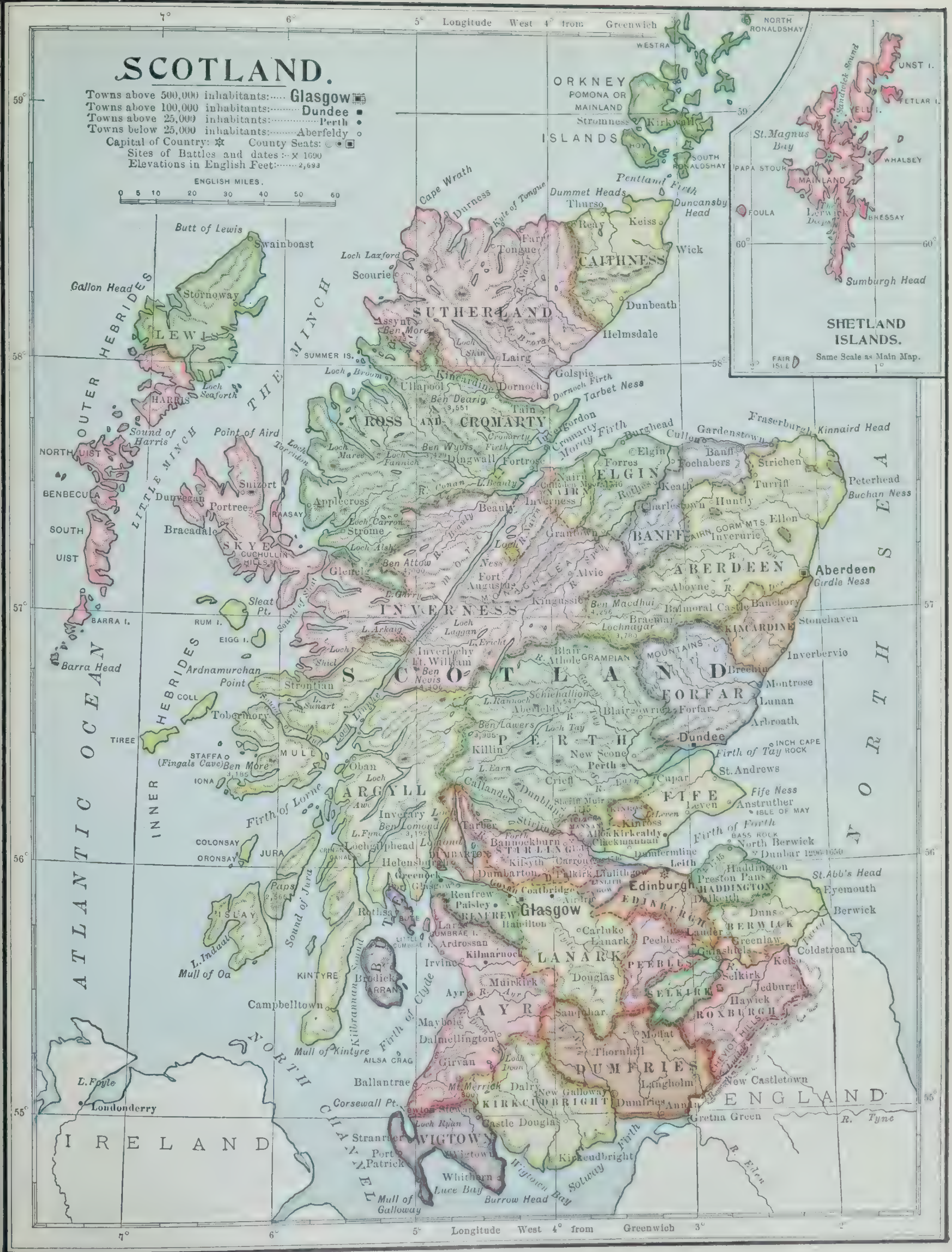
Princes Street, Edinburgh

Note the beautiful monument in the centre. It was erected by the Scottish people to the memory of Sir Walter Scott.

The chief industry in the Southern Uplands is the weaving of woollens. The wide grasslands of this region maintain very large flocks of sheep, and all the wool produced, as well as a large amount of imported material, is manufactured locally. The Tweed River has given its name to the principal kind of cloth woven in these Upland mills. Scottish tweed is justly famous for its appearance and durability.

Transportation.—There are about 4,000 miles of railway in Scotland, a great deal of the mileage being in the Lowlands. There are also several canals, the most important of which is the *Forth and Clyde Navigation Canal*, thirty-five miles in length, connecting the Forth with the Clyde. The *Caledonian Canal* is now but little used. It cuts across the northern part of Scotland, taking advantage of many lakes and streams in its course, and has a length of 250 miles. It is capable of accommodating vessels of 600 tons. It should be kept in mind, however, that the coast of Scotland is so deeply indented and the estuaries of the chief rivers run so far into the land that in the leading manufacturing districts it is possible to load almost direct from the factory to ocean-going steamers.

Trade.—The commerce of Scotland is much the same as that of England. Internal and coastal trade is large, on account of the good harbors along the coasts and the large number of railways and canals, especially in the Lowlands. The great estuary of the Forth River, facing east towards Europe, and that of the Clyde, looking west towards America, provide splendid harbors in the Lowlands and encourage trade with both


SCOTLAND.
Towns above 500,000 inhabitants: Glasgow
Towns above 100,000 inhabitants: Dundee
Towns above 25,000 inhabitants: Perth
Towns below 25,000 inhabitants: Aberfeldy
Capital of Country: ✡
County Seats:
Sites of Battles and dates: × 1690
Elevations in English Feet: 2,693
ENGLISH MILES.
0 5 10 20 30 40 50 60
Longitude West 4° from Greenwich
7°
6°
5°
3°
59°
58°
57°
56°
55°
ORKNEY
POMONA OR MAINLAND
ISLANDS
NORTH RONALDSHAY
WESTRA
Stromness
Kirkwall
HOY
SOUTH RONALDSHAY
Pentland Firth
Dummet Heads
Thurso
Duncansby Head
Keiss
Wick
Reay
CAITHNESS
Dunbeath
Helmsdale
SHETLAND ISLANDS.
Same Scale as Main Map.
UNST I.
FETLAR I.
YELL I.
Sandwick Sound
St. Magnus Bay
PAPA STOUR
MAINLAND
WHALSEY
Lerwick
BRESSAY
FOULA
Sumburgh Head
FAIR ISLE
60°
1°
Cape Wrath
Durness
Kyle of Tongue
Farr
Tongue
Loch Laxford
Scourie
Assynt
Ben More
SUTHERLAND
R. Brora
Loch Shin
Lairg
Golspie
Dornoch
Dornoch Firth
Tarbet Ness
SUMMER IS.
Loch Broom
Ullapool
Kincardine
Ben Dearig 3,551
Tain
ROSS AND CROMARTY
Invergordon
Cromarty
Cromarty Firth
Moray Firth
Burghead
Loch Maree
Loch Fannich
Ben Wyvis 3,429
Dingwall
Fortrose
Loch Torridon
Applecross
R. Conan
L. Beauly
Beauly
Inverness
Culloden Moor 1746
Nairn
NAIRN
Forres
Elgin
ELGIN
Rothes
Fochabers
Cullen
Banff
Gardenstown
Fraserburgh
Kinnaird Head
Strichen
Peterhead
Buchan Ness
Turriff
Keith
Huntly
Charlestown
BANFF
Grantown
CAIRN GORM MTS.
Inverurie
Ellon
ABERDEEN
Aberdeen
Girdle Ness
Aboyne
R. Dee
Banchory
Balmoral Castle
Braemar
Ben Macdhui 4,296
Lochnagar 3,786
Stonehaven
KINCARDINE
Inverbervie
MOUNTAINS
GRAMPIAN
Brechin
Montrose
FORFAR
Forfar
Lunan
Arbroath
Dundee
INCH CAPE ROCK
Firth of Tay
St. Andrews
Cupar
FIFE
Fife Ness
Leven
Anstruther
ISLE OF MAY
Firth of Forth
BASS ROCK
North Berwick
Dunbar 1296 1650
Loch Carron
Strome
Loch Alsh
Ben Attow
Glenelg
Loch Ness
Fort Augustus
Alvie
MONADHLEAD
Kingussie
INVERNESS
L. Garry
L. Arkaig
Loch Laggan
L. Ericht
Inverlochy
Ft. William
Ben Nevis 4,406
Loch Shiel
Blair Atholl
SCOTLAND
Strontian
L. Sunart
Loch Linnhe
L. Rannoch
Schiehallion 3,547
Aberfeldy
Ben Lawers 3,984
Loch Tay
Killin
PERTH
New Scone
Perth
Blairgowrie
L. Earn
Crieff
Callander
Dunblane
Sheriff Muir 1715
KINROSS
Kinross
L. Leven
Stirling
Bannockburn
STIRLING
Alloa
Kirkcaldy
Clackmannan
Dunfermline
Leith
Linlithgow
Edinburgh
EDINBURGH
Dalkeith
Preston Pans
Haddington
HADDINGTON
St. Abb's Head
Eyemouth
Berwick
Duns
BERWICK
Greenlaw
Lauder
Coldstream
Kelso
Galashiels
Selkirk
SELKIRK
Jedburgh
Hawick
ROXBURGH
CHEVIOT HILLS
Peebles
PEEBLES
Carluke
Lanark
LANARK
Douglas
Glasgow
Coatbridge
Airdrie
Hamilton
Falkirk
Carron
Kilsyth
Dumbarton
DUMBARTON
Helensburgh
Greenock
Renfrew
Paisley
RENFREW
Oban
Loch Awe
ARGYLL
Firth of Lorne
Inveraray
Ben Lomond 3,192
L. Fyne
Lochgilphead
Loch Lomond
Tarbert
CRINAN CANAL
Rothesay
BUTE
LITTLE CUMBRAE I.
CUMBRAE I.
Largs
Ardrossan
Irvine
Kilmarnock
Brodick
ARRAN
Ayr
R. Ayr
Muirkirk
AYR
Sanquhar
Maybole
Dalmellington
Girvan
AILSA CRAG
Ballantrae
Loch Doon
Mt. Merrick 2,764
Dalry
New Galloway
KIRKCUDBRIGHT
Castle Douglas
Kirkcudbright
Thornhill
Moffat
DUMFRIES
Langholm
Dumfries
Annan
Gretna Green
Solway Firth
Wigtown Bay
Burrow Head
Whithorn
Wigtown
WIGTOWN
Newton Stewart
Loch Ryan
Stranraer
Port Patrick
Luce Bay
Mull of Galloway
Corsewall Pt.
Firth of Clyde
Kilbrannan Sound
Mull of Kintyre
KINTYRE
Campbelltown
NORTH CHANNEL
Butt of Lewis
Swainboast
Gallon Head
Stornoway
LEWIS
Loch Seaforth
HARRIS
Sound of Harris
OUTER HEBRIDES
THE MINCH
LITTLE MINCH
NORTH UIST
BENBECULA
SOUTH UIST
BARRA I.
Barra Head
Point of Aird
Snizort
Dunvegan
Portree
RAASAY
Bracadale
SKYE
CUCHULLIN HILLS
Sleat Pt.
Sound of Sleat
RUM I.
EIGG I.
INNER HEBRIDES
Ardnamurchan Point
COLL
Tobermory
TIREE
STAFFA (Fingals Cave)
MULL
Ben More 3,185
IONA
Sound of Mull
COLONSAY
ORONSAY
JURA
Paps 2,566
Sound of Jura
ISLAY
L. Indaal
Mull of Oa
ATLANTIC OCEAN
NORTH SEA
L. Foyle
Londonderry
IRELAND
ENGLAND
R. Tyne
R. Eden

these continents. Through the ports of Scotland pass yearly millions of dollars worth of raw materials to be manufactured in her great factories into many kinds of useful articles. These are shipped out again to most of the countries of the world.

Cities and Towns.—The capital, *Edinburgh*, on the east coast, has a most picturesque situation on high parallel ridges about two miles from the south shore of the Firth of Forth. It is the literary and educational centre of Scotland and is the seat of one of the four universities of the country. The city contains many superb public buildings, art galleries, museums, and hospitals, and it is rich in objects of historical interest, such as Edinburgh Castle, Holyrood Palace, St. Giles' Church, the Cathedral of St. Mary's, and the Gothic spire erected in memory of Sir Walter Scott. Though Edinburgh is not noted as a manufacturing city, it contains a number of large factories. The principal industries are type-setting, printing, and book-binding. Brewing and distilling are also of importance. As it faces the east, its trade is chiefly with the countries on the continent. *Leith*, two miles distant on the Firth of Forth, is the port of Edinburgh. Near the city is the famous bridge over the Firth of Forth.

Photo from Ewing Galloway, N.Y.

A Business Street in Aberdeen

Glasgow, on the Clyde, is the second most populous city in the British Isles and the greatest ship-building centre in the world. The deepening of the Clyde River and the unusually good natural harbor have brought a substantial share of the trade of the world to Glasgow and have made it one of the three largest ports in the British Isles. Like Liverpool, it faces the west and has therefore developed an extensive trade with North and South America. Its nearness to the coal and iron district and its excellent railway and steamship service have led to the building of many factories, principally for the production of iron and steel goods, textiles, and chemicals. Glasgow is also the distributing centre for the chief manufacturing district of Scotland. It has many splendid buildings, is the seat of a university, and municipally is a most progressive city.

Aberdeen, at the mouth of the *Dee River*, is close to the finest fishing grounds of the North Sea and is therefore the great fish market of Scotland. It has also large manufactures of cotton and linen. Its harbor is very fine. Near the city are granite quarries, from which much of the stone used in the buildings of the city is obtained. A great quantity of granite is dressed and shipped abroad, as Scottish granite is a valuable and highly-esteemed decorative stone. Aberdeen is also the seat of a university. *Dundee*, on the *Firth of Tay*, is another centre of the Scottish fishing industry. It has large linen, jute, and hemp factories and is known all over the world for its excellent brand of marmalade. A little to the south of Dundee is the city of *St. Andrews*, famous as the seat of the oldest university in Scotland, founded in 1411.

Paisley, seven miles from Glasgow, manufactures more thread on spools than any other place in the world. It is near to the sheep-raising district and therefore manufactures tartans, muslins, and carpets. *Kirkcaldy*, on the Firth of Forth, was the first town to manufacture linoleum and oilcloth. It still maintains its reputation for the production of these two fabrics and is at the same time an important textile centre. Large cloth factories are located at *Galashiels* and *Hawick* in the Southern Uplands. *Inverness*, a small town in the Highlands, manufactures woollens and leather goods, and has extensive shipyards. Its situation at the head of *Moray Firth* amid wild highland scenery makes it one of the most beautiful and picturesque towns in Great Britain. Six miles distant is *Culloden Moor*, where was fought the battle that ended forever the hopes of the Stuarts of regaining the crown of Great Britain.

IRELAND

Position and Extent.—Ireland, made up of the *Irish Free State* and *Northern Ireland*, is separated from Great Britain by St. George's Channel, the Irish Sea, and the *North Channel*. The island is 302 miles in length, with an average width of 110 miles. Its area is about one-eighth that of Alberta, and the population is estimated at four and a half millions. Northern Ireland occupies the north-eastern part of the island and includes in its borders about one-sixth of the total area.

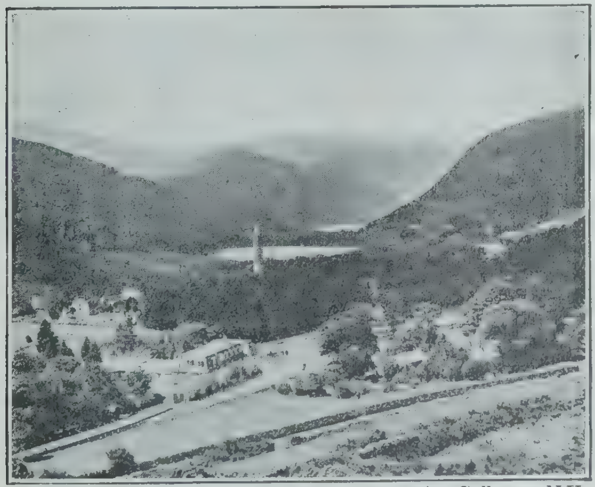


Photo from Ewing Galloway, N.Y.
A beautiful Valley in Ireland

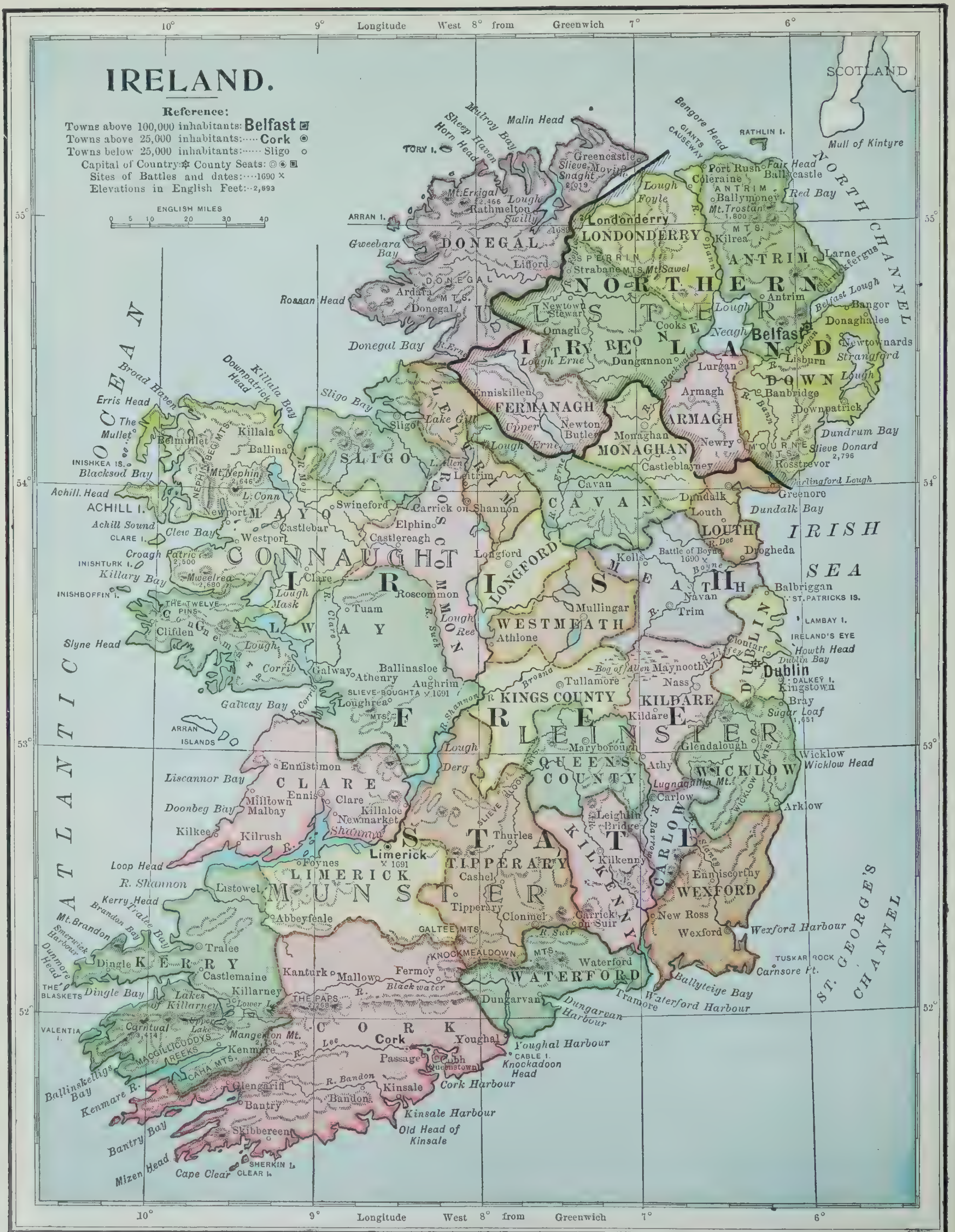
Surface.—The surface of Ireland consists of a central plain, which seldom rises more than 300 feet above sea-level, and two mountainous areas, one in the south, the other in the north and west. The central plain stretches across the island from east to west and covers about one-third of the country. Since it is low and flat, it is poorly drained and abounds in small lakes and bogs. Among the bogs, however, are frequent areas of drier soil, which is very fertile and is easily worked. The bogs also furnish an abundance of peat, or turf, for fuel.

Photo from Ewing Galloway, N.Y.
A Village Market in Ireland

Within the mountainous areas to the north and south are many small lowlands, as the mountains do not form continuous chains, but stand rather in separate dumps of hills. The mountains abound in wild ravines, bold cascades, and beautiful lakes.

Rivers and Lakes.—The most important river of Ireland is the *Shannon*, which rises in *County Cavan* and, after a course of 254 miles, flows into the Atlantic Ocean. It has many lake expansions, the chief of which are *Loughs Ree* and *Derg*. The estuary is about seventy miles long and ten miles in width. Quite large vessels can ascend the river as far as *Limerick*. Navigation is aided by a series of locks near *Athlone* and Limerick. The *Liffey* is about fifty miles in length and empties its waters into *Dublin Bay*. The *Boyne*, after a course of eighty miles, flows into the Irish Sea. It is navigable for small vessels as far as *Drogheda*. All the chief rivers are connected by canals. In all, there are nearly 900 miles of canals in Ireland.

Lough Neagh, the largest lake in the British Isles, lies in the northern part of the country. It is sixteen miles in length, with an average breadth of ten miles. The shore on the south is low and marshy. Its waters are drained into the North Channel by the



IRELAND.

Reference:
Towns above 100,000 inhabitants: Belfast
Towns above 25,000 inhabitants: Cork
Towns below 25,000 inhabitants: Sligo
Capital of Country; County Seats
Sites of Battles and dates: 1690 ×
Elevations in English Feet: 2,893

Lower Bann River. The *Lakes of Killarney,* in the south-west, are celebrated for their beauty and are a favorite tourist resort. The three connected lakes lie in a basin in the midst of the mountains of *Kerry,* and are studded with beautifully wooded islands.

Coast-Line.—The northern coast of Ireland is steep and rocky, with many bays and inlets. On the east the coast is generally flat, sandy, and regular, and there are many sand-banks and rocks which are a hindrance to navigation. The south coast is also fairly regular, but on the west, from being exposed to the full force of the Atlantic Ocean, the coast is bold, rocky, and very irregular. Along the shore are many bays and a number of small islands.

Photo from Ewing Galloway, N.Y.

Sackville Street, the principal Thoroughfare in Dublin, Ireland

Climate.—The climate of Ireland is more equable than that of England. The temperature seldom falls below 40° in winter. This mildness is due largely to the character of the surface, as well as to the increased distance from the continent and the more direct influence of the Gulf Stream. The rainfall is abundant and is uniformly distributed. More rain falls, however, on the western half of the island than falls on the eastern side.

Agriculture.—The mild and moist climate of Ireland is peculiarly suited to the growth of excellent grass, so that four-fifths of the agricultural land is devoted to the raising of horses, cattle, swine, and sheep, and to dairy-farming in general. Fat cattle, bacon, butter, milk, and eggs are sent across to England in large quantities. Oats and barley are grown to some extent, but potatoes are the largest crop. Other vegetables are also raised. Flax, grown for its fibre, is another important product, especially in Northern Ireland.

Minerals.—With the exception of the quarrying of sandstone, granite, and marble, there is very little mining or quarrying in Ireland. Peat takes the place of coal for fuel in homes, while for other purposes coal is imported from England and Scotland.

Manufacturing.—As Ireland lacks both coal and water-power, manufacturing has not developed to any extent save in the east, which is close to the coal supplies of Great Britain. The chief industry in Ireland is the manufacture of linen, and for this product the Irish factories are famous. Flax is grown for its fibre, not as is usual in this country, for the oil from its seed. When ripe it is pulled, not cut, and left on the ground until the gummy substance that holds together the fibres and the woody matter is decayed. It is then taken to the factory, where it is combed out and made ready for spinning. The moist and comparatively cool climate of Ireland is very favorable both to the growing and to the spinning of flax. The linen industry has grown to such proportions, however, that the island cannot produce sufficient flax, and much of the raw material has, therefore, to be imported from Belgium and Russia, and some from Canada.

Second in importance is the ship-building industry, although both coal and iron have to be imported. Some of the finest vessels in the world are launched from the shipyards of *Belfast*. There is a considerable woollen industry; *Donegal* tweeds are famous the world over. Cotton thread is manufactured in Belfast, and there are rope works at various points. Some silk is also manufactured. Brewing and distilling are flourishing industries.

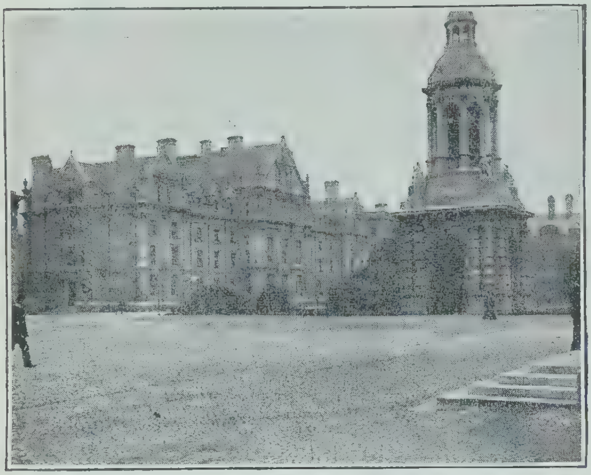


Photo from Ewing Galloway, N. Y.

Trinity College, Dublin

Cities and Towns.—The trade of Ireland is carried on almost entirely with Great Britain, even the exports destined for Canada and the United States being sent first to English and Scottish ports to be re-shipped from there. For this reason the chief cities of Ireland have grown up on the east coast. *Dublin,* the beautiful capital of the Irish Free State, is situated on the Liffey River. It is noted as an educational centre, the University of Dublin being one of the great educational institutions of the British Isles. Dublin, which is comparatively close to the coal districts of England and Wales, is the centre of the woollen and silk manufactures of Ireland.

Belfast, the capital of Northern Ireland, is the largest industrial city in Ireland. It has a good harbor opening towards Great Britain. All branches of the Irish linen industry centre there, so that Belfast leads the world in its output of linen goods. As has been said, one of its great industries is ship-building, as the city has splendid facilities for launching vessels, and coal and steel are easily brought in from Great Britain. It is also the seat of a university.

Cork, on the *Lee River,* has an excellent harbor and has a large export trade in cattle and provisions. It manufactures woollen goods. Its most famous building is St. Anne's Shandon Church, noted for its beautiful chimes. On an island in Cork Harbor stands *Cobh,* where Atlantic liners call with mail to be forwarded by rail across Ireland, by boat across the Irish Sea, and then by rail again to its destination in Great Britain. *Limerick,* on the Shannon, is the only port of any size on the west coast. It is the market and shipping centre of a fine farming country. It manufactures lace and gloves, and exports bacon, butter, and eggs. *Londonderry,* in the extreme north, on the west bank of the *Foyle River,* is noted for its ancient walls, for its cathedral, and for its historical associations. It manufactures linen and exports considerable farm produce.

An old Castle on the Banks of the Lakes of Killarney

Helps.—What advantages do Great Britain and Ireland derive from their insular position? Draw an outline map of the British Isles, filling in the mountains and rivers. Describe briefly the surface of each country. Compare the surface of England and Wales with that of Scotland; with that of Ireland. Compare the surface of Scotland with that of Ireland. Compare the climate of England with that of France; of Norway; of Labrador. Why the difference? Account for the difference in climate between Manchester and Edmonton, two cities almost in the same latitude. What climatic conditions account for the famous London fogs? for the name *Emerald Isle* given to Ireland? Account for the heavy rainfall over the islands. Why does the climate of Northern Ireland differ from that of the Highlands of Scotland? If the Cambrian and Pennine Mountains lay along the east coast, what would be the effect on the climate?

Trace the coast-line of each of the islands. What is the effect of the irregular coast-line on the fishing industry? Compare the fisheries of the east and west coasts. Why the difference? Why should the fishing industry be of such importance to Great Britain? How are the products affected by the surface and climate? Account for the importance of sheep-raising in Great Britain. Why is so much land unoccupied in the islands, when not nearly enough food is raised in them to support the people? Summarize the geographical conditions which have made the British Isles pre-eminent (*a*) in shipping; (*b*) in manufactures; (*c*) in trade and commerce.

On an outline map of the British Isles mark the location of the principal mineral regions and the chief manufacturing towns, so as to show clearly the relation between the mineral wealth of the country and its manufactures. Make a list of familiar articles which are manufactured in the British Isles. What natural conditions favor the manufacture of iron and steel goods? woollens? cottons? There is no coal in the immediate vicinity of London; why, then, is it such a great manufacturing city? How far do the manufactures depend upon the natural resources? From what countries does Great Britain draw her raw wool? her raw cotton? Why has Ireland more linen manufactures than either England or Scotland?

There is comparatively little water-power available in the islands; what effect will this eventually have on the commerce of the country? If the coal supply of Great Britain should suddenly fail, what would be the effect? If oil were to be used entirely as fuel for ships, what would be the effect on England? If there were to be an entire failure of the cotton crop in the United States, how would this affect the British Isles? How will British commerce be affected by the constantly increasing use of water and electric power in the manufacturing plants on the continent? What effect has the Manchester Ship Canal on the price of cotton? What effect has the opening of the Panama Canal had on the commerce of London and Liverpool? Compare England with Canada as a manufacturing country.

Locate on an outline map the chief seaports. Account for their location. What natural advantages has London? Liverpool? Glasgow? Dublin? Cork? Southampton? Cardiff? Newcastle? Belfast? How many of the seaports are at the mouths of rivers? What advantages does this give to each? What would you expect to be the chief exports of London? Manchester? Glasgow? Cardiff? Dublin? Why?

How does Ireland compare with England as (*a*) an agricultural country; (*b*) a mining country; (*c*) a manufacturing country? Make a similar comparison (*a*) between England and Scotland; (*b*) between Ireland and Scotland. Compare the commerce of the British Isles with that of France; of Norway; of Italy. Why the difference?

Name as many Canadian cities and towns as you can that are named after places in the British Isles. What are the chief exports of the British Isles to Canada? What does Canada send in return? Compare the Thames as a commercial river with the St. Lawrence.

GIBRALTAR AND MALTA

Gibraltar.—The rock of Gibraltar is situated off the southern coast of Spain, commanding the entrance to the Mediterranean Sea. It is an immensely strong fortress and occupies a position of great strategic importance. It has a commodious harbor, and is equipped with three graving docks, capable of accommodating the largest battleships in the British Navy. It is also important as a coal and oil station, supplying fuel for the navy and for some 5,000 ships which enter its harbor each year.

Malta.—The island of Malta, lying in the Mediterranean Sea, half-way between Gibraltar and the Suez Canal, is strongly fortified. The colony includes the adjoining islands of *Gozo* and *Comino*. The surface of Malta is much broken by rocks. The climate is for the most part temperate and healthful. Grapes, oranges, figs, apricots, and peaches are grown in large quantities for export. Two and often three crops of vegetables can be raised in a year. Lace-making employs about 5,000 women and children.

Malta, owing to its position, is one of the most important ports in the Empire. It is the headquarters for the British fleet in the Mediterranean. *Valetta*, the capital, is situated on a narrow neck of land, which, with the mainland on either side, forms two excellent harbors. It is strongly fortified and has naval docks and refitting yards.

Helps.—From your History find out how Gibraltar and Malta came into the possession of Great Britain. Tell briefly the story of the famous siege of Gibraltar by the Spaniards from 1779 to 1783. Tell all you can about the fortifications of Gibraltar and Malta. What would be the effect on the Empire should Great Britain give up their possession? Has Malta any commercial importance?

THE BRITISH EMPIRE IN AMERICA

The British Empire in America includes the *Dominion of Canada, Newfoundland, Bermuda,* and the *British West Indies* in North America, *British Honduras* in Central America, *British Guiana* on the mainland of South America, and the *Falkland Islands* in the South Atlantic. Canada and Newfoundland have already been considered in detail. *See pages* 27 *and* 99.

BERMUDA

The Bermuda Islands consist of a scattered group of some 360 coral islands lying in the Atlantic Ocean about 600 miles east of the coast of the United States and 800 miles south of Halifax. Only about twenty of them are inhabited. They are low and flat, and have neither springs nor fresh-water streams. The inhabitants must depend upon the rain for their supply of water. Many of the tropical fruits and trees grow luxuriantly, particularly the banana and the palm. The chief products are vegetables, including onions and potatoes, and lily-bulbs. Lumber and food supplies are imported from Canada and the United States. The islands, with their beautiful scenery and delightful climate, attract many tourists.

Stalactite Caves in Bermuda
Stalactites are rock structures formed just as icicles are in an open cave with a leaking roof.

Bermuda is used as a naval station by the British Admiralty and is garrisoned by Imperial troops. *Hamilton,* the largest harbor, has an immense floating dock, 381 feet long and capable of raising a battleship of over 10,000 tons. The only other important harbor is *St. George's.*

Helps.—On the map locate Bermuda in its relation to London; to Halifax; to New York. Why is it made use of as a naval station? What is its commercial importance to the Empire? Why is it that Bermuda can raise vegetables all the year round? What products would it naturally send to Canada? What should Canada send there?

THE BRITISH WEST INDIES

The British West Indies include *Jamaica,* the *Bahama Islands,* the *Leeward Islands, Barbados,* the *Windward Islands, Trinidad,* and *Tobago.* With the exception of the Bahamas, all the British colonies in the West Indies lie between the Tropic of Cancer and the equator, within the Torrid Zone.

We have already discussed on page 117 the surface, climate, and productions of the West Indies in general, but a few words additional may be said in regard to the production of the British West Indies in particular. The staple crop of all the islands is, of course, sugar-cane, from which raw sugar, molasses, and rum are manufactured. But the British islands have within recent years very much increased the cotton acreage and, moreover, are planting more and more land with the cacao tree, from the bean of which cocoa and chocolate are made. Increased attention is also being given to the cultivation of tropical fruits, particularly the banana and the pineapple. In addition, almost every island has some one product to which it gives special attention, for example, arrowroot in *St. Vincent,* limes in *Dominica,* and spices in *Grenada.*

Canada is very much in need of these and other products of the British West Indies either as food or as raw material for her factories. Further, Canada has many of the products which the West Indians cannot produce for themselves and which they must have. Among these are cereals, flour, dairy products, condensed milk, apples, meats, boots and shoes, lumber, and hardware. The nearest of the British West Indies is only 1500 miles from Halifax, a comparatively short distance by water. In spite of all this, however, the islands in 1926 exported to Canada only about $13,000,000 worth of products, and imported goods to the value of only $10,000,000 But Canadian trade with the British West Indies is increasing year by year, and with improved steamship service it may be expected soon to reach large proportions.

Jamaica.—The island of Jamaica, lying in the Caribbean Sea about ninety miles south of Cuba, is the largest of the British West Indies. Attached to it for purposes of government are *Turks* and *Caicos Islands*, the *Cayman Islands*, *Morant Cays*, and *Pedro Cays*. The general aspect of Jamaica is very beautiful. Mountain ranges, with cross ranges between, cover the island, only one-twentieth of the surface being level. The valleys are deep and narrow, while the mountains are thickly forested. The coastline is in some parts low with a gentle slope from the hills, in other parts steep and rugged, and is provided with several good natural harbors, including *Kingston*, the capital. The harbor and the entrance to Kingston are protected by forts. The temperature is high and remarkably even throughout the year. Earthquakes occur frequently, but hurricanes are less common than in the neighboring islands.

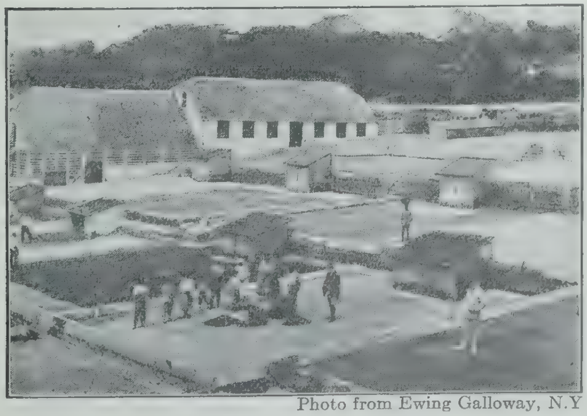


Photo from Ewing Galloway, N.Y

Coffee-drying Yard, Jamaica

Though the soil of Jamaica is less fertile than that of the other West India Islands, the products are much the same—sugar, rum, molasses, coffee, cacao beans, coconuts, fruits, and spices. The island is famous for its ginger, prepared from the underground stem of a plant native to the soil. The growing of bananas is now one of the leading industries of the island. The forests yield many kinds of excellent wood, such as ebony and mahogany. The export trade is carried on almost entirely with Great Britain and the United States, about one-third going to the latter.

The Bahama Islands.—The Bahamas are a group of 700 coral islands stretching from near the coast of Florida to Haiti. Only about forty out of the whole group are inhabited. The capital is *Nassau* on the island of *New Providence*.

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Sponges being dried at Nassau, Bahamas

The islands are very flat and low, many of them barely rising above sea-level. The climate is pleasant, though hurricanes and droughts occur frequently. In spite of the fact that the soil is not very fertile, cotton, oranges, lemons, pineapples, and vegetables are cultivated. The chief manufacturing industries are pineapple-canning and the making of sisal hemp, which is woven into fibre by the natives. The latter are also very skilful in the making of articles from tortoise-shell. Sponges and large turtles are found in the coast waters, and there are natural salt-beds of great value on some of the islands. The export trade of the colony is shared by Miquelon, Mexico, Canada, the United States, and the United Kingdom, in the order named.

The Leeward Islands.—This group lies to the south-east of Porto Rico and north of the Windward Islands. They are divided into five Presidencies—*Antigua*, with *Barbuda* and *Redonda*; *St. Kitts*, with *Nevis* and *Anguilla*; *Dominica*; *Montserrat*; and the *Virgin Islands*, with *Sombrero*. The islands are of volcanic origin and are very mountainous, but the soil is exceedingly rich and fertile. They lie, however, within the hurricane belt, and destructive storms are not infrequent. The climate is tempered by the sea-breezes and by the mountains.

A typical Street in a West Indian Town

Note the palms which line the streets.

Sugar, molasses, and rum are the staple products. Cotton is grown on all the islands except Dominica. In Dominica lime-juice and citrate of lime are important manufactures. Tropical fruits are leading exports, especially pineapples from the Virgin Islands and Antigua. In addition to the products already mentioned, the islands export limes, coconuts, cacao, and some cattle. Trade is largely with Great Britain and the United States, but there is a growing trade with Canada. *St. John*, the capital, on Antigua, *Basseterre* on St. Kitts, and *Roseau* in Dominica are the chief towns.

Barbados.—The island of Barbados is the farthest east of the British West Indies. It is twenty-one miles long, with an area of 166 square miles. It is a low-lying island, has many hills and valleys and is practically surrounded by coral reefs, which render it dangerous for navigation. The climate is hot, the temperature averaging 80° throughout the year, and hurricanes are not uncommon. The soil is fertile, and practically three-quarters of the island is under cultivation, the chief products being sugar and cotton. These, with molasses and rum, are the chief articles of export. The entire external trade of the colony is carried on with Canada, the United Kingdom, and the United States, Canada receiving considerably more than the lion's share. *Bridgetown* is the capital.

The Windward Islands.—These islands lie between Martinique and Trinidad, and form part of the eastern barrier of the Caribbean Sea. Included in the group are *Grenada*, *St. Vincent*, *St. Lucia*, and the *Grenadines*. The surface and climate of the islands are much the same as in the Leeward group, but they are not so subject to hurricanes. Sugar, molasses, and rum are the chief products, but St. Vincent produces the best cotton in the Empire, and there are large cacao plantations on both St. Lucia and Grenada. St. Vincent is also famous for its arrowroot. Other leading products are honey, logwood, cattle and hides, onions, coconuts, and nutmegs. The exports of Canada to the Windward Islands, especially to St.Lucia are quite large; in fact, she shares almost equally with Great Britain the trade of the islands. *Castries*, on St. Lucia, is the chief town of the islands, and is also a very important coaling-station. It has one of the finest harbors in the West Indies.

Trinidad and Tobago.—The islands of Trinidad and Tobago are situated off the coast of Venezuela, immediately north of the mouth of the Orinoco River. The total population of the two islands is about 385,000, the white element being composed chiefly of English, French, Spanish, and Portuguese. There are also a large number of East Indians who were brought in to work on the plantations.

Trinidad is very mountainous, but Tobago is for the most part a low-lying plain. Both are well watered by numerous streams and in many places are still densely wooded. The tropical growth is luxuriant. The *Pitch Lake* in Trinidad, 110 acres in extent, produces hundreds of thousands of tons of asphalt annually, from which the colony derives a substantial revenue. The principal products are cacao, sugar, molasses, rum, crude petroleum, asphalt, and gasoline. These are exported chiefly to the United Kingdom, the United States, Canada, France, and Venezuela. The imports come from the same countries with the exception of France. The developing and refining of oil is becoming an increasingly important industry. In Tobago rubber, cotton, and tobacco are cultivated. The capital of Trinidad is *Port-of-Spain*, one of the finest towns in the West Indies. *Scarborough* is the chief town of Tobago.

Helps.—On the map locate the British West Indies in their relation to the other West India Islands; to London; to Halifax; to New York; to the Panama Canal. Give a brief general description of their surface and climate. Why are a number of the islands subject to hurricanes? From their location what would you expect to be their chief products? What are their staple products? Why? Why should Canada have very close trade relations with the British West Indies? Which of the islands would you prefer to visit? Of what use are the islands in the defence of the Empire? What is their commercial value to the Empire?

OTHER COLONIES

British Honduras.—British Honduras lies on the east coast of Central America on the Caribbean Sea. The coast-land is low and swampy and is sheltered from the open sea by a number of islands. The interior is mountainous and is covered with dense forests. The *Belize*, the principal river, flows through the middle of the country. The soil is for the most part fertile, but, with the exception of fruits, practically all articles of food and clothing must be imported. The chief products are chicle, mahogany, bananas, and coconuts. Trade is carried on with Great Britain, the United States, and Mexico, although Canada has a small share. There are fewer than 2,000 whites in the country, the intense heat and the humidity making the climate very trying. *Belize*, the capital and chief city, is a distributing centre for goods bound for Central America.

British Guiana.—This important colony is situated on the north coast of South America between Venezuela and Dutch Guiana. It forms a somewhat narrow belt of land running southward from the coast. About one-third of the inhabitants are East Indians, who were brought from India to work on the sugar plantations, and a little more than one-third are Negroes. There are nearly 10,000 native Indians. Practically the entire population lives along the coast.

Digging Asphalt, Trinidad

The coast-line of British Guiana is lined with swampy alluvial flats, very similar to the delta of the Nile, useless in their natural state for purposes of cultivation. Behind the coastal belt is an undulating region densely covered with tropical forest, which passes into a region of high mountains. To the south is a savanna region, with a few trees and grown over with grass. Of these four zones—the coastal belt, the forest region, the mountain region, and the savanna belt—the swampy coastal belt is the most productive. A great deal of this land has been reclaimed by the building of dikes, and on it rich crops are raised. The climate is hot and damp, with heavy rains.

The principal products of British Guiana are sugar-cane, rice, coconuts, coffee, cacao, and rubber. Cattle are raised in the savanna belt, but they are so far from a market that the industry is not profitable. Gold and diamonds are extensively mined. The chief exports are sugar, rum, molasses, charcoal, timber, and diamonds. The imports are chiefly textiles, flour, machinery, manures, boots and shoes, and butter. Great Britain has considerably more than one-half of the import trade, Canada ranking next, and the United States third. The exports are sent chiefly to Great Britain and to Canada, the latter falling very little behind the mother country. The capital, *Georgetown*, on the *Demerara River*, has an excellent harbor.

The Falkland Islands.—This group lies in the South Atlantic about 300 miles east of the Straits of Magellan. They consist of two large islands, *East Falkland* and *West Falkland*, with about a hundred smaller islands. Attached to them for purposes of administration are *East Georgia*, *South Georgia*, the *South Shetlands*, the *South Orkneys*, the *Sandwich Group*, and *Graham's Land*. The total population is about 3,500. On South Georgia is a whaling-station with 1,300 inhabitants. The islands are somewhat mountainous, but there is an abundance of good pasture-land. The principal industry is sheep-farming, there being nearly 700,000 sheep on the islands. The whaling industry is also important, with an annual product of over half a million barrels of oil. Whale-oil, with wool, frozen meat, and tallow, are the principal exports. The trade is mainly with Great Britain. The chief town is *Stanley*.

Helps.—Describe briefly the surface and climate of British Honduras and British Guiana. Locate them on the map in relation to the equator. Compare the coast of British Guiana with that of Holland. Show that the products of British Honduras and British Guiana are dependent on the surface and climate. Why are there so many Hindus in British Guiana? What products does British Guiana send to Canada? What does she receive in return? Locate on the map the Falkland Islands. What is their value to the Empire? Why is South Georgia of importance?

THE BRITISH EMPIRE IN ASIA

The British Empire in Asia includes *Cyprus*, *Aden*, the *Indian Empire*, *Ceylon*, the *Straits Settlements*, *British Borneo*, and *Hong Kong*. It also includes the protectorate of the *Federated Malay States*, the leased territory of *Weihaiwei*, and the mandated territories of *Palestine*, *Trans-Jordan*, and *Iraq*.

CYPRUS AND ADEN

Cyprus.—The island of Cyprus, the largest in the Mediterranean after Sicily and Sardinia, lies about forty miles from the coast of Asia Minor. In spite of the fact that more than half of the surface is mountainous, and excessive droughts frequently ruin the crops, the industry of its Turk and Greek inhabitants has made the island one of the most productive in the Mediterranean.

Wheat, barley, and potatoes are the principal crops. Tobacco is cultivated to a considerable extent, and cotton is grown on irrigated land. There is a small export of fresh fruit, but the production of dried fruits, such as raisins and sultanas, is increasing rapidly. The most important industry, however, is the gathering of the pods from the locust tree. The beans are shipped to Great Britain, where they are ground down to make cattle food. There are more goats and sheep than cattle on the island, and the Cyprus mules are celebrated throughout the East. The capital is *Nicosia*, near the centre of the island.

Aden.—The peninsula of Aden, on the south coast of Arabia, near the entrance to the Red Sea, is for the most part a mass of barren, volcanic rock, five miles long and three miles wide. The inhabitants are chiefly Arabs and Negroes. The peninsula owes its importance to the town of *Aden*, which has a commodious natural harbor and is a coaling-station for ships passing through the Suez Canal to and from India and the East. As it commands the southern entrance to the Red Sea, and thus the road to India, it is strongly fortified and forms a veritable Gibraltar of the East.

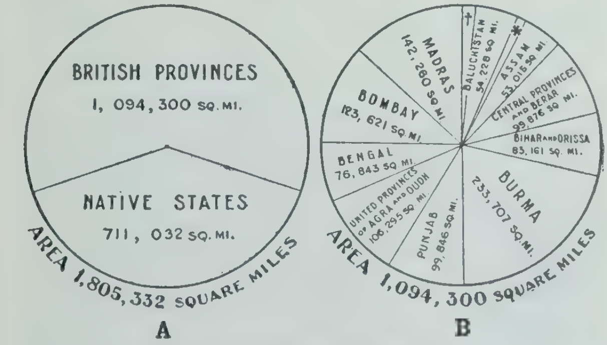
Aden is a free port, and, therefore, the greater part of the commerce of South-western Arabia passes through it. Owing to the hot, dry climate, the peninsula produces little, the chief industries being the manufacture of salt and cigarettes. It is administered by the Indian government.

Attached to Aden for administrative purposes are the island of *Perim*, *Socotra*, and the *Kuria Muria Islands*. The latter were ceded to Great Britain for the purpose of landing the Red Sea cable. *Perim* has a good harbor and is used as a supply and coaling station for vessels. Along with Aden, it guards the entrance to the Red Sea and is, therefore, strongly fortified.

Helps.—As Cyprus lies off the main stream of commerce in the Mediterranean, what is its value to the Empire? Find out what you can about its past history. What are its chief products? Compare its climate with that of Malta. Is irrigation of importance in the island? Why? Show clearly by reference to the map the prime importance of Aden in the defence of the Empire. For what is it otherwise noted? What is the value of Perim?

THE EMPIRE OF INDIA

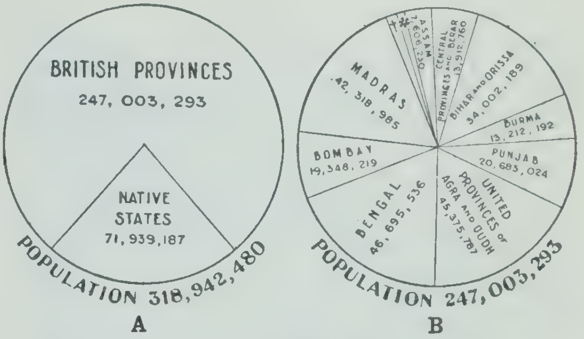
Position and Area.—The *Empire of India* includes not only the peninsula lying south of the *Himalaya Mountains* and between the *Arabian Sea* on the west and the *Bay of Bengal* on the east, but also the territory bordering on the eastern coast of the Bay of Bengal and extending as far south as the *Isthmus of Kra* on the Malay Peninsula. The French have several small settlements on both sides of the peninsula, and the Portuguese have several on the west coast. There are also the independent states of *Nepal* and *Bhutan* in the north. With these exceptions, the entire country either belongs to Great Britain or is under her rule. The total area of British India is only a little more than 1,800,000 square miles, scarcely one-half that of the Dominion of Canada.



Area of British India

A. Relative Areas of British Provinces and Native States.
B. Area of British Provinces.

*North-West Frontier Province, 13,419 sq. mi.; Ajmer-Merwara, 2,711 sq. mi.; Coorg, 1,582 sq. mi.; Delhi, 593 sq. mi.; Andaman and Nicobar Islands, 3,143 sq. mi.



Population of British India, 1921

A. Relative Population of British Provinces and Native States.
B. Population of British Provinces.

*North-West Frontier Province, 2,251,345. † Ajmer-Merwara, 495,271; Coorg, 163,838; Delhi, 488,188; Andaman and Nicobar Islands, 27,086.

For administrative purposes India is divided into fifteen provinces—*Madras, Bombay, Bengal, Agra and Oudh,* the *Punjab, Burma, Bihar and Orissa, the Central Provinces and Berar, Assam, The North-West Frontier Province, Ajmer-Merwara, Coorg, Baluchistan, Delhi,* and *The Andaman and Nicobar Islands.* In addition there are about 700 native states, whose government is more or less under the control of Great Britain. These states have over one-fifth of the total population of the country.

People.—India contains within its borders about 320,000,000 people, more than one-fifth of all the people in the world. It is estimated, however, that of this vast population fewer than 2,000,000 can speak the English language. The people of India belong to a great number of different races and speak so many different languages that frequently the natives in one village have difficulty in understanding the conversation of natives in a village only a few miles away. Generally speaking, however, they may be divided into three main classes.

Scattered throughout Central and Southern India are the descendants of the original inhabitants of India, known as Dravidians. They are a short, dark-skinned people with broad noses and curly hair. In the north and west and mingling to some extent with the Dravidians farther south, are the descendants of the Aryans, a race of tall, fairer-skinned, bearded men, with long thin noses. This race is now represented by the Hindus, who form the vast majority of the population of India. In the region to the north-east are the people with a pronounced strain of the Mongolian races in them. They are short and strongly built, with flat faces, slanting eyes, yellowish skin, and long, black hair, resembling the Chinese and Japanese.

Photo from Ewing Galloway, N.Y.

Natives bathing in the Ganges at Benares

Over two-thirds of the people of India follow the teachings of Brahma. The remaining natives are divided among Mohammedans, Buddhists, and Christians. Brahmanism teaches the doctrine of caste, which holds that some are born in a high station of life, others in a lower, and so on down until the lowest caste is reached. The members of the various castes will have nothing to do with one another, nor may they inter-marry. The caste system has been a serious obstacle to progress in India, but it is very slowly being broken down. Another superstition for which Brahmanism is responsible is that bathing in the *Ganges River* will wash away disease. Hundreds of thousands of Hindus make a pilgrimage to the river each year and bathe in its waters.

Surface.—India Proper falls naturally into three great divisions, which vary greatly in character: the northern mountain region, the vast plains of the *Indus* and the Ganges in Central India, and the *Plateau of the Deccan* in the south. The northern part is covered by high and rugged mountains, which rise more or less abruptly from the plain beneath and form the loftiest highland system of the globe. Chief among these are the Himalayas, in the north and east, which have more than forty snow-capped peaks rising to a height of over four and a half miles. *Mount Everest*, which is 29,000 feet high, is the highest point in the world.

The arc of the circle formed by the Himalayas is continued to the west by the *Hindu Kush* and *Karakoram Ranges* and from them southward by a series of lower ranges known as the *Sulaiman* and *Kirthar Ranges*. At the east end of the Himalayas the mountain wall turns south into the *Patkai* and *Arakan Yoma Mountains*. This vast mountain region varies in width from 180 to 220 miles and contains many enormous valleys, in any one of which the whole of the Alps might be set. Baluchistan, at the extreme west of India, on the Arabian Sea, consists mainly of tablelands, mountains, and deep valleys, and, owing to the absence of rain, is almost entirely desert. The

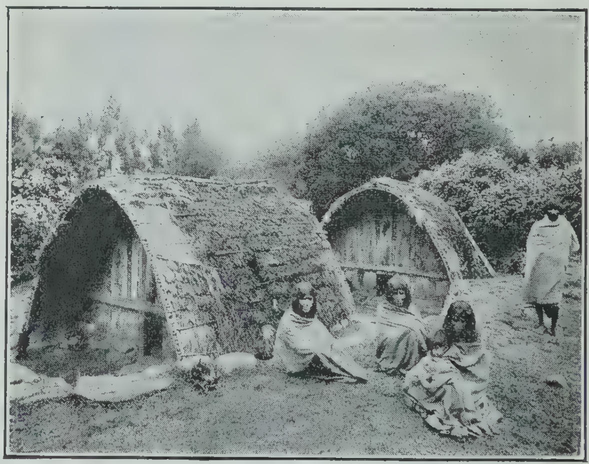


Photo from Ewing Galloway, N.Y.

Natives of Baluchistan

Note the peculiar huts in which the people live.

surface of the interior of Burma, which lies along the east coast of the Bay of Bengal and forms the eastern boundary of the Indian Empire, is also very mountainous, with parallel ranges running north and south and narrow valleys between.

The mountains of India are of great importance both historically and geographically. They form an almost insuperable barrier between India and the countries to the north and have thus many times during her history protected her from invasion by enemy armies. The only means of approach to India by land lies through the passes to the north-west, where the mountains are lower. The *Khyber* and the *Bolan Passes* are the most travelled roads in this district, which stretches for 700 miles from *Kabul* to *Karachi*. The mountains have also a very marked effect upon the climate of India, making it warmer and moister than it would otherwise be.

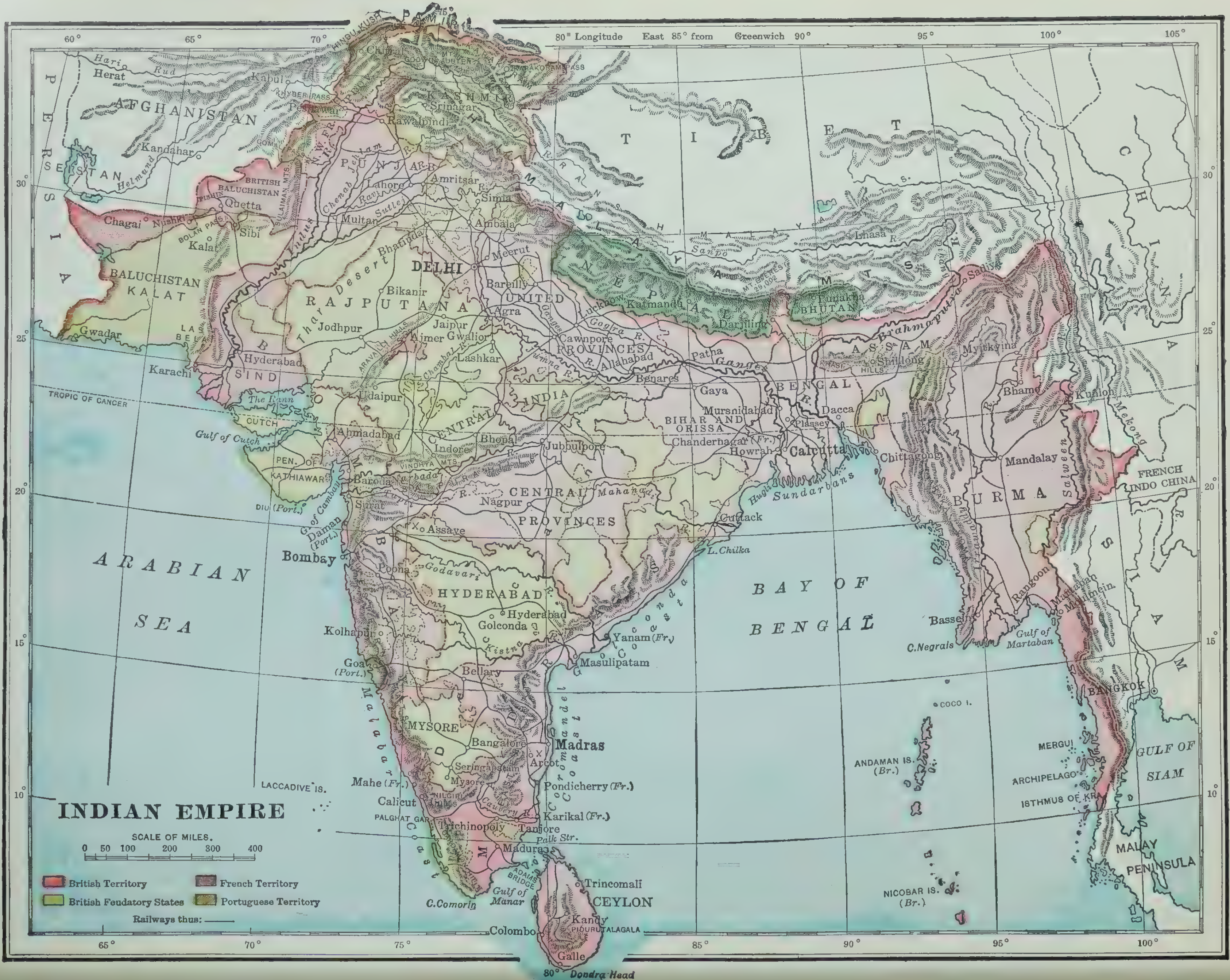
The drainage from the mountains, brought down by the two great rivers of India, the Ganges and the Indus, form the rich soil of the vast central plain, which many centuries ago was a great sea. The plain is divided by a low watershed into the great plain of the Ganges to the east and the smaller plain of the Indus to the west. It is from 150 to 300 miles in width and stretches across the country from the borders of Baluchistan on the west to the highlands of Burma on the east. This is the most densely populated section of India and also the most important industrially.

South of the great plain lies the Plateau of the Deccan, which occupies the greater part of the peninsula. It is a tableland varying in height from 1500 to 2500 feet, and in shape it resembles a triangle. It slopes down in terraces from the west to the east, and consequently all the important rivers of Southern India flow eastward. The plateau is separated from the great central plain by a series of elevations, chief among which are the *Aravalli Hills* and the *Vindhya Mountains*. It is bordered on the east and west by two coast ranges, the *Eastern* and *Western Ghats*, which meet in the extreme south in the *Nilgiri* or *Blue Hills*. The plateau is by no means level, but is very broken and rocky. Between the Ghats and the coast on both sides of the peninsula are belts of fertile lowland. On the west the level strip is very narrow, seldom exceeding forty miles in width, but on the south and east it is comparatively broad.

Drainage.—India is a land of mighty rivers. Most of them have their sources in the mountain ranges that form the northern boundary of the country. They are fed by the snow from the mountain-tops, which, as it melts under the intense heat of the sun, ensures a constant and plentiful supply of water. The two chief rivers, the Indus and the Ganges, have already been mentioned.

Photo from Ewing Galloway, N. Y.
A native Pump in India

The Indus, which is 1800 miles long, rises north of the Himalayas and flows in a south-westerly direction, emptying its waters into the Arabian Sea. Fed by glacier streams, it rushes in sweeping torrents through deep gorges worn in the mountains. Once out on the plains, it is joined by its four great tributaries, which, with the Indus, give to the surrounding country the name of the *Punjab*, which means "the land of the five rivers". From the port of Karachi, where the Indus flows into the Arabian Sea, the products of the north-western region are carried by ocean vessels to all parts of the world.



INDIAN EMPIRE

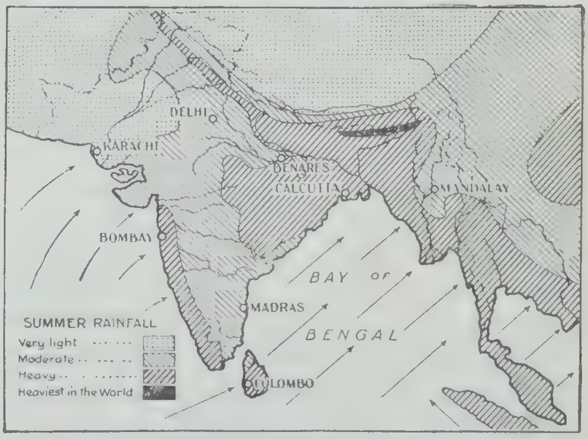
The Ganges, with its tributaries, on the other hand, flows in a south-easterly direction for 1500 miles across Northern India almost parallel with the Himalaya Mountains, until it empties into the Bay of Bengal. By means of an elaborate system of canals the waters of the Ganges have been used to irrigate many miles of formerly dry and barren country. Near its mouth the Ganges is joined by the *Brahmaputra*, which is nearly 400 miles longer than the Ganges itself. The Brahmaputra rises north of the Himalayas, just a few miles from the source of the Indus. After flowing for a thousand miles on the northern side of the mountains, it breaks through the barrier and flows south to the plain of Assam, where it joins the Ganges.

A Banyan Tree
The branches drop fibres, which take root and later become trunks of the tree.

The *Narbada* and the *Tapti*, which have their sources in the highlands of the Deccan, are rivers of considerable importance emptying into the Arabian Sea. Rising on the eastern slope of the Deccan are a number of smaller rivers, chief among which are the *Godavari* and the *Kistna*, which flow across the peninsula into the Bay of Bengal. The rivers of India are almost useless for transportation, as the deltas are difficult to navigate. In Burma, however, the rivers provide the chief means of communication, as roads are few and far between. During the rainy season they frequently overflow their banks, flooding the country for miles around. For this reason, the one-story bamboo houses of Burma are always built on piles, and every house possesses some sort of a boat or canoe. The most important river in Burma is the *Irrawaddy*, which flows from the northern border to the Bay of Bengal.

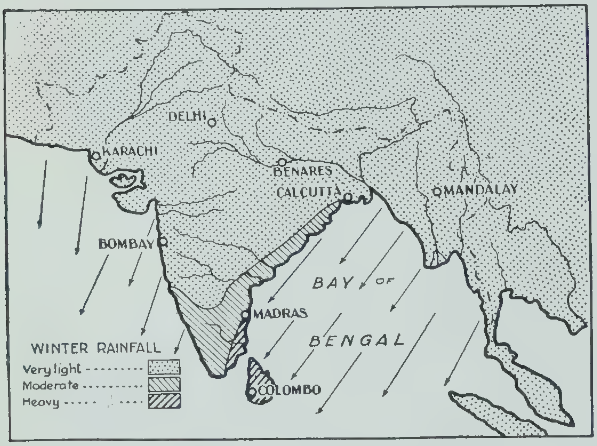
Coast-Line.—India has a coast-line of some 3000 miles with very few indentations and consequently almost no natural harbors. The only harbor of any importance is at *Bombay* on the Arabian Sea. The waters on the eastern coast are shallow and storm-beaten, the only suitable dock for large vessels being at *Madras*.

Vegetation.—The mountainous regions of India, the Himalayas, and part of the Deccan are covered with immense forests, while the plain of the Ganges has much jungle land. The trees on the mountains are for the most part those which are commonly found in Europe, but on the lower slopes the growth is tropical. The most valuable of these trees are the teak, from which a high grade of lumber is produced and used in ship-building and in furniture-making, and the bamboo, which is more like an enormous kind of grass than a tree. Other commercial trees are the deodar, the sal, the ebony, the sandalwood, and the palm.



Summer Rainfall of India
Note the direction of the monsoons.

Animal Life.—In the forests are to be found many kinds of wild animals. High up in the forests of the Himalayas roam the wild goat and the mountain sheep. In the tropical jungles of the plains the magnificent tigers make their lairs, watching their chance to creep silently out upon the unsuspecting cattle who provide their chief source of food. The brave and cunning panther and the wild boar, together with the tiger, are the favorite game of Indian sportsmen. Elephants are also hunted, but with the aim of capturing them alive and training them for riding and heavy hauling work. Monkeys are found everywhere; huge rhinoceroses live in the swamps near the Brahmaputra River; and crocodiles twenty feet long make their homes in many of the rivers. The greatest danger in the Indian jungle is from poisonous snakes. It is said that at least 20,000 people die each year from the bite of the cobra alone.



Winter Rainfall of India
Note the direction of the monsoons.

Climate.—India is so extensive and so varied in its surface features that it has necessarily a variety of climates. Generally speaking, the year may be divided into three seasons—the hot, the rainy, and the cool. During the hot season, which extends from March to May, there is usually no rain, and the blazing heat of the sun is almost unbearable. During this season most of the Europeans in India seek the more healthful climate of the foothills of the Himalayas, just as many people in our own country avoid the heat of summer by going to the mountains, the northern lakes, or the seashore. Those who are forced to remain in the plains, however, usually sit during the heat of the day in darkened rooms with the breeze from several large fans playing upon them, too exhausted to exert themselves.

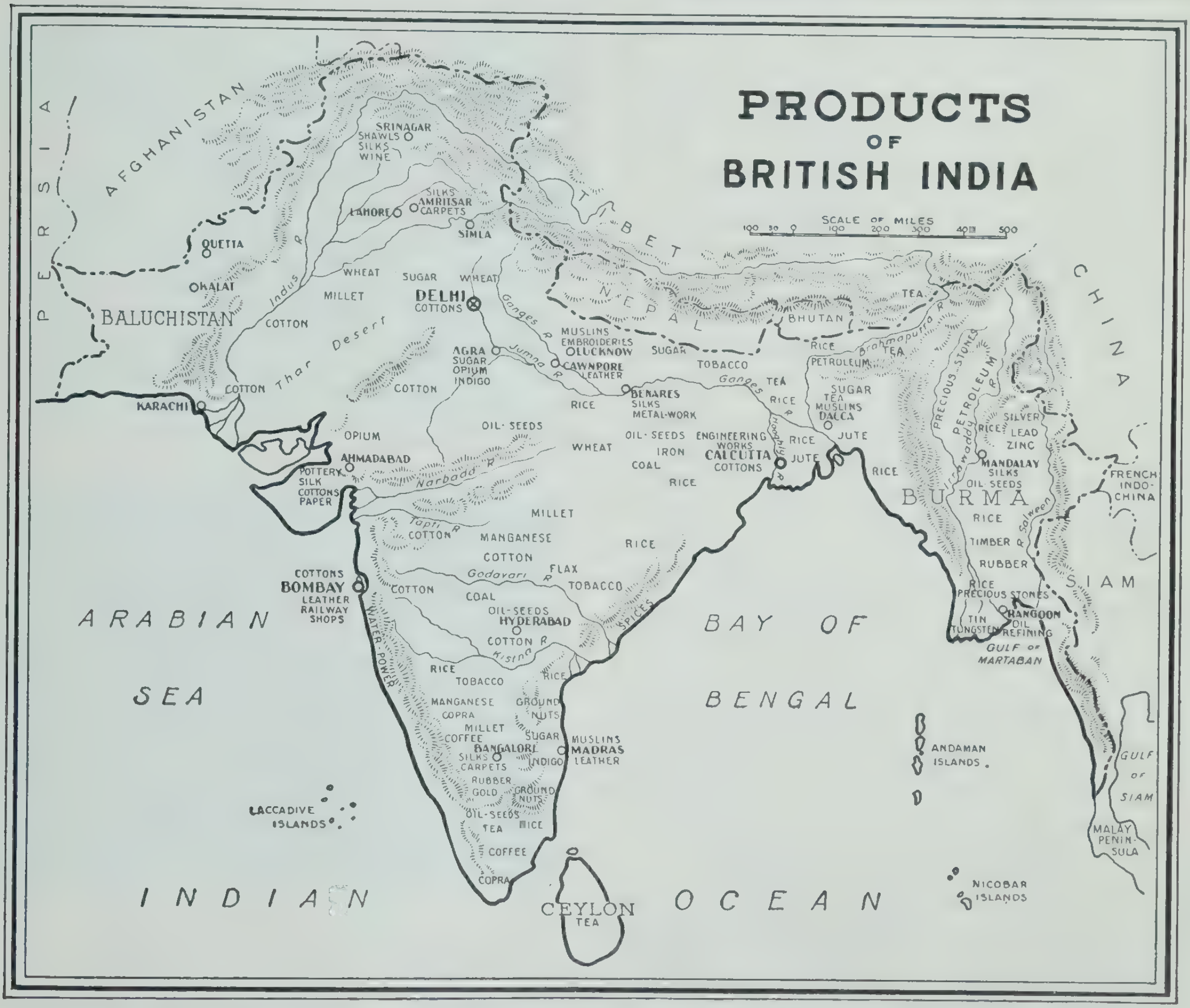
During the hot season dust storms are frequent in the interior, but in Assam and Bengal thunderstorms bring heavy rains, which afford welcome relief to the people and are of great importance in the growth of the tea and rice crops. On the slopes of the *Khasi Hills* and on the plains of Assam is the rainiest region in the world, some parts receiving as much as 500 inches in a year.

About the beginning of June the south-west monsoon blows in from the warm oceans bringing deluges of rain to the parched land in many parts of the country. These heavy rains continue day after day and cause a rapid growth of vegetation. In the plateau region and in northern India millions of people depend for their food upon the timely bursting of the south-west monsoon. If there is any delay or if there is not sufficient rainfall, the crops fail, and famine causes the death of many thousands of people. Before the development of irrigation, famines were frequent in the valley of the Indus, which, because of its situation, is very dry. A large part of the Deccan, also, except in the cotton-growing regions, is too dry for cultivation without irrigation.

From November to February is the cool season. During these months the northern monsoon blows, making the climate dry and cool, but never cold because the high mountain wall cuts off the very cold winds from the great interior of Asia. On the plains the thermometer seldom varies more than sixteen degrees during the whole year. During the cool season the rainfall in the Punjab is sufficient for the wheat crop, which is untouched by the heavy rains of the rainy season in other parts of the land.

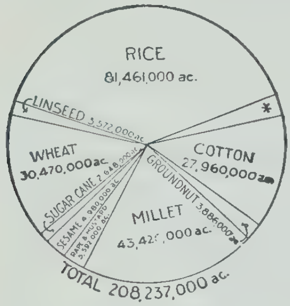
Agriculture.—The great variety of climate permits the cultivation of many kinds of plants in different parts of the country. The evenness of the temperature even in Northern India makes possible the production of two crops a year, while in the south, around Madras, three crops of rice are usually obtained annually. This helps to shorten the periods of famine and relieve the distress of the people.

Northern India produces two classes of crops. The spring crop consists of wheat, millet, oil-seeds, opium poppy, tobacco, and pulse, which includes all vegetables whose edible portion grows in a pod, such as peas and beans. These require very little water and grow best during the cool season. They are therefore planted during October and November and harvested in March and April. Rice, sugar, indigo, jute, cotton, and tea, on the other hand, require plenty of water and can be grown only during the wet season. In the south, where there is no cool season and the land is well irrigated, the crops are the same the year round.



The land in India is for the most part cultivated by the natives in small holdings. The farming methods are very primitive. Little machinery is used. The ground is merely scratched with a plough which resembles a sharpened stick. The grain is cut with sickles and sometimes even pulled by hand. It is threshed by being trodden out by buffaloes and bullocks and is allowed to lie on the ground in piles until shipped to market. The meal or flour for the family is made by the women. The millet or wheat is placed between two stones, the top stone being turned rapidly until the grain is ground. In the cultivation of the soil the natives make great use of the bullock and the buffalo, and in the drier parts of the camel.

India is a great agricultural country. With such an enormous population the production of food for the people is the chief occupation. More than one-third of the cultivated area is devoted to rice, of which two crops a year generally are raised. In 1926 the yield was over 30,000,000 tons. The warm, moist climate of Lower Burma is particularly well suited to the production of rice. As the population of that province is comparatively small, the bulk of the product is exported, Burma being the chief source of the world's supply of rice.



Acreage under Chief Crops in British India, 1925-26

*Jute 3,115,000 acres; Tea, 729,000 acres; Coffee, 142,000 acres; Rubber, 133,000 acres; Indigo, 129,000 acres.

Millet, a kind of corn much used as food by the poorer people and as fodder for cattle, is the second crop in importance. It can be grown in any part of India, regardless of temperature and rainfall. All the millet grown is used within the country. Wheat is the third crop in rank and forms an important article of export to Great Britain. Recently, however, the Indian government has been restricting the amount allowed to leave the country.

Cotton, raised principally in the Deccan, furnishes the raw material for the many cotton mills and for export, the 1926 crop yielding over 6,000,000 bales. Tea is grown extensively in the foothills of the Himalayas, in Assam, and in other sections, and forms one of the principal exports. Over 300,000,000 pounds were produced during 1926, and about three-quarters of a million people were employed on the plantations. India has almost a monopoly of the production of jute, a very valuable coarse fibre used for making ropes and bags. It is grown mainly in Bengal around the delta of the Ganges. Over two and a half million acres are devoted to the production of sugar-cane, but the crop is no more than sufficient for local needs; in fact, much sugar is imported.

Rubber, flax, indigo, ground-nuts, coffee, and tobacco are other leading crops. The mulberry tree is cultivated, but not so extensively as in China; and immense quantities of poppies are raised for the manufacture of opium. Seeds, such as the castor bean, rape, and mustard, are largely exported. India has long been famed for its spices, such as cardamoms and pepper, which are much used by the natives to flavor the somewhat tasteless rice.

Cattle are raised in enormous numbers, but mainly for domestic use, as the religious beliefs of a section of the people, who regard the cow as sacred, prevent their use for food. To provide meat for the people, as well as milk, goats are raised in large numbers. In some sections it is extremely difficult to feed the cattle, as there is no natural grass-land. In spite of this, however, India has over 150,000,000 cattle, almost five times as many as wander over the plains of Argentina. There is, therefore, a very large export trade in hides and skins. Cattle manure mixed with clay is used as fuel by the larger number of the natives, especially in the crowded sections.

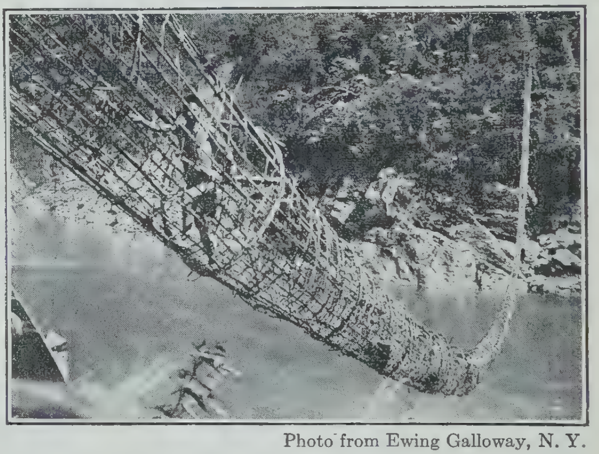


Photo from Ewing Galloway, N. Y.

Crossing a River in India

The bridge, made of crude ropes and bent cane, with a foot path on the lower side, is very stout and durable.

The great need of agriculture in India is water, and many schemes for irrigating the land are being undertaken by the government. The greater part of the country has a rainfall of less than seventy inches annually, and as this is not sufficient in the hot climate, all those districts can be cultivated only with the aid of an artificial water-supply.

Wells are the most common means of irrigation in Central India, as they can be sunk very easily wherever water is found near the surface. Tanks or reservoirs are also frequently used to store the surplus water of the rainy season. In the Indus Valley, in the Punjab, in Bengal, and in the south about Madras, the government has spent large sums of money in constructing canals, which have greatly increased the production of crops in those areas. About 48,000,000 acres are now under irrigation.

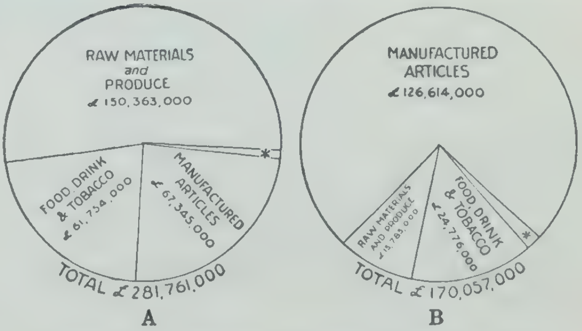
Photo from Ewing Galloway, N.Y.

Bullock Cart used by the Natives

Minerals.—India is rich in minerals, the principal being coal, gold, iron, petroleum, manganese, silver, mica, and salt. The coal is usually found in inaccessible places and is of a poor quality, so that the smelting of iron is a somewhat costly operation. The mines are but little worked. The development of railways has brought European iron to the Indian market much more cheaply than it can be produced there and has rather discouraged home production. The output of petroleum in Burma is very large, and there are also valuable wells in Assam. Salt is obtained from the mines of the *Salt Hills* in the far north and from salt lakes in the dry region, as well as by means of evaporation on the coast. India is one of the chief sources of the world's supply of manganese, which is used for hardening steel. Tungsten and tin are found in considerable quantities, but little has been done as yet to develop these deposits. Many precious stones are mined in various parts of the country, but particularly in Burma.

Manufacturing.—India is peculiarly well suited to the development of manufactures. Raw material is plentiful, labor is cheap and abundant, and both railway and shipping facilities are excellent. The cotton and jute factories alone employ half a million people. Cotton is used everywhere in India as the chief material for making clothing, and jute makes excellent sacking for bags in which to ship the various agricultural products. Canada imports considerable quantities of jute from India. Silk goods are also produced to a limited extent in factories. Most of the manufacturing of India, however, is done by the people in their own homes. Carving in ivory, fine embroidery, and the weaving of silk, carpets, damask, chintz, and muslin are the most important. There are over 11,000,000 handloom weavers in India.

Trade and Commerce.—The chief exports of India are raw cotton, jute, rice, oil-seeds, tea, dyes, hides and skins, wool, wheat, ranking in value in the order named. Rubies are an important article of export from Burma. About one-third of the exports are sent to Great Britain, which receives a little more than the United States and Japan together. Germany, China, France, Belgium, Ceylon, Italy, and Australia follow in order. The imports from the United Kingdom are a little more than one-third as much again as all other countries combined, thus showing the tremendous importance of India as a



Exports and Imports of British India, 1925-26

A. Exports. *Other exports, £2,229,000.
B. Imports. *Other imports, £2,882,000.

market for British goods. The Dutch East Indies, the United States, and Japan are the other chief countries from which imports are drawn. The principal imports are manufactured cotton, metals and ores, machinery, sugar, living animals, liquor, paper, glassware, coal, coke, and tobacco.

Transportation.—For many years the trade of India was greatly hampered by difficulties of transportation both within and without the country. The Ganges forms an excellent internal waterway leading down to *Calcutta*, but the Indus is dangerous on account of its shifting sandbanks, and the rivers in the higher parts are not suited to navigation because of their rapid fall. Road-making across the plains is very costly because of the scarcity of stone, and the steep approach to the plateau makes communication with that region difficult. But under British administration magnificent roads have been constructed, and there is a network of railways covering the country, over 38,000 miles in all, about two-thirds of which are owned by the government. As has already been pointed out, India can be reached by land only in the north-west, and the cost of transportation through the mountain passes is so great that very few goods can be brought in over that route.

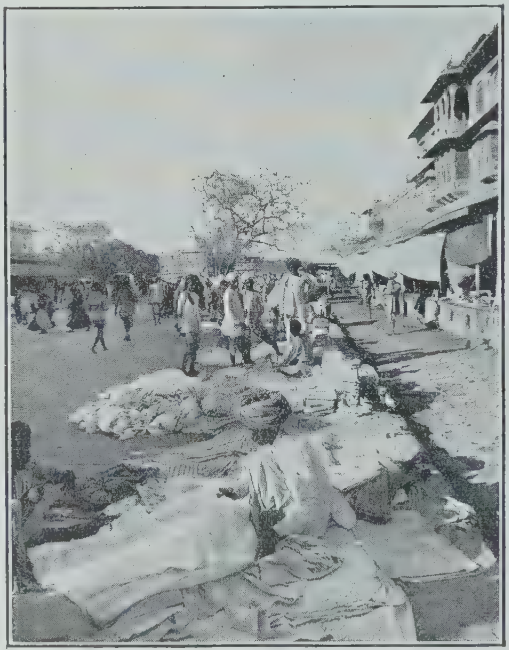
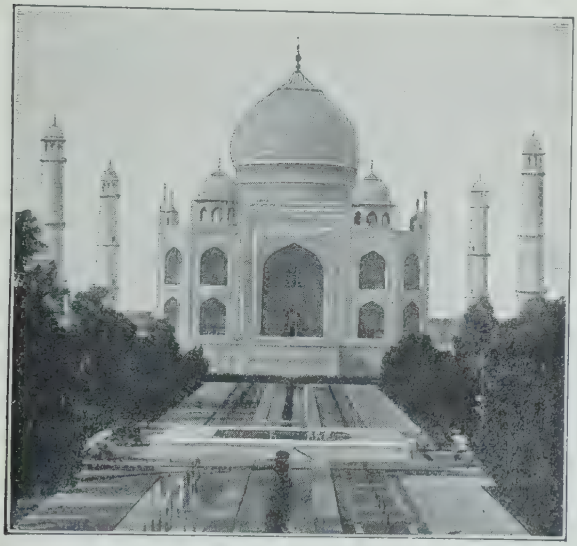


Photo from Ewing Galloway, N.Y.
Drygoods Shops in a City Street

Until about sixty years ago the long and dangerous voyage from India to Europe prevented the development of India's foreign trade, but since the opening of the Suez Canal, which provides a short route from Great Britain to the East, the commerce of India has made tremendous strides. Vessels from every part of the world crowd her ports, and there is regular passenger service from all the important countries. The greater part of the shipping, both freight and passenger, is in British vessels. All parts of India are connected by telegraph, and there is a splendid cable service with most of the large countries of the world.

Cities and Towns.—The natives of India live, for the most part, in scattered villages, composed of little huts made of mud or matting, and they make a living by agriculture or weaving. Of the enormous population of this vast country, only one-fifth live in the cities and towns. *Bombay*, the largest city in India with a population of about 1,175,000, is situated on an island off the west coast and is thus the European gateway of India. It has a magnificent natural harbor and is connected with the interior by two lines of railways. An immense trade from both west and east passes through this port. Bombay is also an important manufacturing town. Its nearness to the richest cotton fields of India accounts for its many mills for the making of cotton goods, which have to a large extent taken the place of the product of the mills in Great Britain. It has also several leather factories and extensive railway shops, which employ large numbers of people. Its inhabitants include representatives of almost every Eastern race and nation.

Calcutta, the second city in the Indian Empire, has a population of about 1,130,000. It is situated ninety miles from the sea on the left bank of the *Hooghly River*, one of the mouths of the Ganges. Shifting shoals make navigation on the river difficult and make costly dredging operations necessary in order to keep the harbor of Calcutta open. In spite of this, it is a great commercial city, and is the distributing centre for all the neighboring district. The manufacturing of jute is the leading industry. There is a striking contrast between the splendid public buildings and the imposing residences of the Europeans on the one hand, and the bamboo huts of the natives on the other. The right bank of the Hooghly is lined with native villages. If the population of these were included, Calcutta would be the largest city in India.



The Taj Mahal

The harbor of *Madras*, on the Bay of Bengal, is with difficulty protected from the force of the ocean waves by a great breakwater. The city, the third in size in India, is the seaport and commercial centre of the south-eastern part of India and owes its importance to the fertile, populous district which lies behind it. *Hyderabad*, the capital of the native state of that name, lies about 400 miles north-west of Madras, and is the fourth city in size. It contains the vast palace of the Nizam, or ruler of the state, and also a magnificent mosque modelled on that of Mecca. The British Residency is one of the finest public buildings in India. Beautiful gardens surround the city on all sides.

Delhi, which since 1912 has been the capital of India, is situated on the *Jumna River* in the centre of the great plain region. It is one of the oldest cities of the world and is surrounded by miles of ruins of ancient cities. It contains many mosques, palaces, and tombs erected to the memory of rulers of the great Mogul Empire. It has now large wheat and produce markets and many cotton-mills, but in its narrow streets the natives can still be seen working busily at their fine embroidery and ivory-carving, in which arts they are masters. *Benares*, situated on the Ganges, is the sacred city of the Hindus. Tens of thousands of pilgrims annually descend its ghats, or steps, to bathe in the purifying water of the sacred river, and everywhere may be seen beautiful palaces and temples dedicated to Hindu gods. The chief industries are metal-work and all kinds of hand-made articles which are produced by the natives in their homes. The city is the centre of the silk industry.

Lucknow, on the *Gumti River*, is a busy commercial city with extensive railway workshops. The natives are employed principally in the manufacture of brocades, muslins, embroideries, jewellery, and glass. The city contains extensive ruins of ancient palaces and has several famous mosques. *Cawnpore*, on the Ganges, is also a commercial city, but owes its importance mainly to military and political conditions. It is the centre of the leather industry of India. Both Cawnpore and Lucknow will long be remembered for the events that took place there during the Indian Mutiny.

Photo from Ewing Galloway, N.Y.

The Victoria Memorial, Delhi, India

Not far from Delhi, on the banks of the Jumna River, stands the historic city of *Agra*. Its celebrated fort contains the magnificent Palace of Akbar, the great Mogul Emperor, under whose wise rule the empire reached the height of its glory. The palace is built of white marble, inlaid with precious stones, and made beautiful with many exquisite carvings. But the chief interest of Agra centres about the Taj Mahal, the most beautiful work of art in India. This noble monument, with its graceful minarets and stately dome, was erected by the Mogul Emperor, Shah Jehan, in memory of his wife. The building was begun in 1719, and it is said that it took 20,000 workmen twenty-two years to complete it. Agra is now an important trading city and railway centre.

Courtesy of Canadian Pacific Railway

A Scene in Mandalay

The taming of elephants is a business in Burma.

Karachi, on the delta of the Indus, has an excellent harbor and is the natural distributing centre for the products of the Punjab. *Ahmadabad*, near the head of the *Gulf of Cambay*, was formerly one of the most magnificent cities of the East and now contains many interesting ruins of palaces and mosques. It has large manufacturing interests, including silk, cotton, paper, and pottery. *Bangalore*, in Southern India, has extensive manufactures of carpets, silks, and cottons. The city is famed for its beautiful botanical gardens. *Amritsar*, in the Punjab, is the centre of the native carpet-weaving industry. *Lahore*, the capital of the Punjab, is a busy city and an important railway centre.

The chief city of the far north is *Srinagar*, which lies in the vale of *Kashmir*, surrounded by the ruins of many ancient palaces and temples. Its principal manufactures are silk, wine, and the famous Kashmir shawls. *Simla*, on the southern slope of the Himalayas about 175 miles from Delhi, is the summer headquarters of the Indian government and a favorite resort for Europeans during the hot season on the plains. It has imposing government buildings, including the residence of the Governor-General.

In Burma are two important cities, *Rangoon* and *Mandalay*. The former, situated on the river of the same name, twenty miles from the *Gulf of Martaban*, has a magnificent harbor at high water. It has a large export trade in rice, teak, gums and spices. Near Rangoon is the celebrated Shwe Dagon pagoda, which attracts many pilgrims each year. Mandalay, located on the Irrawaddy River, is the capital of Burma. It is noted for its silk-weaving and fine carving. On a hill behind the town stands the Arakan pagoda, an enormous Buddhist temple, at the shrine of which thousands of pilgrims worship annually. The principal towns in Baluchistan are *Kalat*, the capital, with a population of 15,000, and *Quetta*, an important British military station, which is connected by railway through the Bolan Pass with the systems of India.

The Indian Islands.—Lying in the Bay of Bengal, 120 miles from the Burmese coast, are the *Andaman Islands*. The islands, some 200 in number, are hilly and very thickly wooded. The tropical climate and abundant rainfall favor the growth of coconuts, rubber, and hemp. The Andaman redwood is a valuable forest product. The islands were at one time used as a penal settlement by the Indian government.

The *Nicobar Islands* are seventy-five miles south of the Andamans. The group consists of twenty-one islands, nine of which are uninhabited. The climate is tropical and not suited to Europeans. The chief exports are coconuts and coconut fibre.

The *Laccadive Islands*, a group of fourteen islands, lie in the Arabian Sea, some 200 miles west of India. The people are almost entirely Mohammedans. The only important products of the entire group are coconuts and coconut fibre.

Helps.—On the physical map of Asia locate India in relation to the great natural divisions of the continent. Locate it in relation to the equator. What effect has elevation on the climate? What would be the effect on the commerce of India if the coast-line were more broken? Compare the great physical divisions of the country as to surface, climate, soil, and products. Compare the forests of India with those of Canada as to trees, animals, and birds. Compare the timber of Canada with that of India. The Himalayas are well provided with water-power; why is it not more used? Compare in this respect with the Rockies.

What is the effect of the failure of the monsoon? Account for the frequent famines. How might these be avoided? Why is irrigation of such importance? Why is the plain of the Ganges the most densely populated section of the country? Why is manufacturing not carried on more extensively? Why should so much cotton goods be imported? Compare a wheat-harvesting scene in India and Alberta. What is the importance of the cotton crop? the wheat crop? the rice crop? the millet crop? the jute crop? What would be the effect if the caste system should disappear? Could India support a white population equal to its present native population?

Trace on the map the various sea-routes from Great Britain to India. Trace the shortest sea-route from Vancouver to Calcutta. Trace the route usually followed. What is the effect of the Himalayas on the commerce of India? What commercial advantages has Bombay over Calcutta? Show what the location of each of the larger cities contributes to its commercial importance. Make a list of the natural products and the manufactured articles of India. Which of these might India send to Canada? What might Canada send in return?

OTHER COLONIES

Ceylon.—In the Indian Ocean to the south of the peninsula of Hindostan is the island of Ceylon. With the exception of some 8,000 Europeans, the population is entirely native and in religion is largely Buddhist. The surface of the southern part of the island is generally mountainous, with small tracts of lowlands, but towards the north it expands into a wide plain, a great deal of which is still impenetrable jungle. The coast-line is uniform, with few good natural harbors. *Colombo*, an artificial harbor on the south-east coast, is the chief port of the island.

The climate of Ceylon is tropical, but is tempered by the surrounding sea. The average rainfall is about ninety inches, but in some districts the rain is not always sufficient for the rice crop.

The soil of the island is exceedingly fertile, and vegetation grows with astonishing rapidity. The climate is ideal for growing tea, which is the chief product of Ceylon. In 1925 two hundred and ten million pounds of tea were exported, Canada receiving a considerable share. Coconut-palms cover quite an extent of the island, with the result that copra, coconut-oil, dried coconut, and coir fibre bulk largely in the list of exports. Coir fibre is made into yarn and used for weaving matting, sailcloth, cordage, etc. Rice, which forms the greater part of the food of the natives, occupies an immense acreage, and rubber plantations are numerous. Areca nuts, cinnamon, and citronella oil are staple products and are largely exported.

A Native School in Ceylon

The mineral resources of Ceylon are not great, but large quantities of graphite are exported. The rubies and sapphires of the island are famous, while the coast abounds in pearl oysters. The larger part of the export trade of Ceylon goes to the British Isles.

The chief towns are Colombo, the capital, *Galle*, *Jaffna*, and *Kandy*.

The *Maldive Islands* are a group of thirteen coral islands, 400 miles south-west of Ceylon. The people are civilized and are capable sailors and traders. The islands abound in coconut-palms and also produce quantities of millet, fruits, and nuts. For purposes of government the Maldive Islands are attached to Ceylon.

The Straits Settlements.—In the Straits Settlements are included *Singapore*, *Penang*, *Malacca*, the *Cocos Islands*, *Christmas Island*, and *Labuan*. *Singapore* is separated from the Malay Peninsula by a strait about three-quarters of a mile wide. The surface is undulating, but at no point does the land rise over 500 feet above sea-level. The verdure, on account of the hot, moist climate, is rank all over the island. The chief products are coffee, pineapples, aloes, and all kinds of tropical fruits. The harbor of Singapore is strongly fortified, as it guards the southern entrance to the *Straits of Malacca*, through which passes most of the traffic from India to China and the eastern part of Australia.

A Street near Singapore—Note the tropical Vegetation

Commanding the northern end of the Straits of Malacca, about 360 miles from Singapore and ten miles from the Malay Peninsula, is *Penang*. The surface is on the whole very hilly, and is covered with forests and vegetation. The climate is extremely hot, with an abundant rainfall. The principal products are tin, spices, sugar, and tobacco, together with coconut-oil. Included in Penang is *Province Wellesley*, a strip of territory on the shore of the mainland averaging eight miles in width and extending for forty-five miles. Off the coast of Perak is the small island of *Pangkar*, which, together with a strip of territory on the mainland, is known as the *Dinding*. This also is included in Penang.

Malacca is a long, narrow strip of territory lying along the western coast of the Malay Peninsula. In the interior are low hills, but the coast districts are flat and swampy. The chief products are rice, tapioca, pepper, and tropical fruits. Tin is mined to some extent.

The *Cocos Islands* number about twenty in all and are of coral formation. They lie in the Indian Ocean about 500 miles south-west of Java. They are covered with coconut-palms, the products of which are practically their only exports. About 400 Malays make their home on the islands. *Christmas Island*, about 250 miles south-west of Java, is covered with rank vegetation. It is important for its phosphate of lime, of which it exports over 200,000,000 pounds annually. *Labuan* is an island six miles from the north-west coast of Borneo, with an area of about thirty square miles. Its large coal deposits are practically its only source of wealth.

Taking the Straits Settlements as a whole, the principal exports are rubber, tin, copra, spices, sago, and tapioca. They import chiefly rice, cottons, tobacco, fish, and coal. The greater part of the trade is with Great Britain. The principal towns are *Singapore* on the island of that name and *Georgetown* in Penang. The harbor of Malacca is now filled up with silt.

The Federated Malay States.—Included in the Federated Malay States are *Perak*, *Selangor*, *Negri Sembilan* (nine states), and *Pahang*. They are under British protection. The surface and climate of the states have already been described in connection with the Malay Peninsula, where all of them are situated. The principal products are coconuts, rice, rubber, sugar, tapioca, and spices. In Perak an immense irrigation project provides water for 70,000 acres of rice through a main canal twenty-one miles in length. The forests contain much valuable timber, in addition to oils, resins, and canes. The mining of tin is one of the chief industries of the people. The chief exports of the states are rubber, copra, and tin. Most of the trade is carried on with neighboring states and with India.

British Borneo.—British Borneo includes the colony of *British North Borneo*, and the protectorates of *Brunei* and *Sarawak*, which occupy the northern and north-western part of the island of Borneo, in the South China Sea. The surface is exceedingly hilly, densely wooded, and well watered by numerous large rivers. The climate is hot and damp, and the rainfall is abundant. The population consists chiefly of Chinese, Malays, and the native Dyaks. Many of the male inhabitants are skilled workers in brass, while the women are noted for making beautiful cloth handsomely embroidered in gold.

Timber is the greatest natural resource of all three territories, the forests yielding camphor, gutta-percha, rubber, rattans, etc., in large quantities. Coconuts, sago, rice, and various spices are cultivated on the plantations, and the tobacco industry is growing rapidly. The territories are also very rich in minerals, gold, coal, and oil being produced and exported in large quantities. Fishing is an important industry, and mother-of-pearl is one of the chief exports. The principal towns are *Brunei* on the river of the same name and *Kuching* on the *Sarawak River*.

Hong Kong.—The Crown Colony of Hong Kong is situated off the south-east coast of China, at the mouth of the *Canton River*, near the great Chinese city of *Canton*. It consists of an island thirty square miles in area, and a small peninsula on the mainland. The island is twenty-nine miles in extent and is separated from the mainland by a narrow strait. The surface is mountainous and rocky and well watered by numerous streams. Viewed from the sea, particularly around the harbor of *Victoria*, the island is very beautiful, but the interior is dreary and monotonous and entirely devoid of trees. The climate is tropical. From May to August rain falls almost without ceasing, and the penetrating dampness and humidity make the climate very unhealthy during that period. Of the total population, some 13,000 are Europeans and Americans.

The chief industries of the colony are sugar-refining, ship-building and repairing, tin-refining, and the manufacture of rope, tobacco, cement, and knit-goods. Victoria, the capital, which stretches for four miles along the heights above a magnificent and strongly fortified harbor, is one of the greatest trade centres of the world. It is also exceedingly important from a military and naval standpoint, being the principal station of the British navy in the Far East.

Hong Kong is a free port and is the chief centre for the foreign trade of China. Being on the great trade-route from Japan and Shanghai to India and Europe, its importance as a place of transhipment is tremendous. The commerce of the colony is mainly with Great Britain, India and Ceylon, Australia, the United States, China, and Japan, the chief articles being sugar, flour, rice, cotton, silk, and tea.

Weihaiwei.—The territory of Weihaiwei, in the province of *Shantung*, is leased to Great Britain by the Chinese government. It includes, in addition to the port and the bay, the island of *Liu Kung* and a strip of land ten miles wide along the coast of the bay. The mainland consists of rocky hills with fertile valleys lying between. The seat of government is at *Port Edward* on the mainland.

The territory is used as a base for flying squadrons of the British China fleet, as a naval storehouse and exercise ground, and as a sanatorium for sick and disabled seamen belonging to the navy. The base is very strongly fortified.

The population is almost entirely Chinese and is engaged chiefly in agriculture and fishing. The usual grains, vegetables, and fruits are grown, and cotton and the silkworm are cultivated. Trade, carried on by steamer and Chinese junk, is brisk, so that the people are generally prosperous. The principal exports are bean oil, cotton, eggs, nuts, fish, salt, and sugar.

Helps.—Locate on the map the possessions of Great Britain in Southern and South-eastern Asia. Locate each of these in its relation to the equator. What would you expect to be their products? What are the chief exports? Describe the surface and climate of Ceylon? What are its principal products? Trace the sea-route from Calcutta to Hong Kong. What is the importance, both commercial and strategic, of Penang and Singapore on this route? What is the value of Hong Kong and Weihaiwei to the Empire? To what does Hong Kong owe its commercial importance? What direct benefit does Great Britain derive from these Asiatic possessions?

THE MANDATED TERRITORIES

Palestine.—Palestine is a small country, having less than half the area of Nova Scotia. Its population consists chiefly of Arabs and Jews, and is very little greater than that of the city of Montreal. It is governed by Great Britain under mandate from the League of Nations.

Photo from Ewing Galloway, N. Y.
Caravan of Camels on Jericho Road, Palestine

The surface of Palestine is mountainous. Between the eastern ranges and the mountains which parallel the coast on the west lies the valley of the *Jordan River.* In its course this river expands into the *Sea of Galilee* and finally empties into the *Dead Sea.* The surface of the Dead Sea is far below the level of the ocean, and its waters are so salty that fish cannot live in them. From February until October rain scarcely ever falls in Palestine, and the heat during that period is very oppressive. In the winter season rain is plentiful.

Photo from Ewing Galloway, N.Y.
The Mosque of Omar, Jerusalem

Palestine is at the present time by no means the rich and fertile country we know so well from the pages of the Bible. Yet the soil is good, and, when properly irrigated, yields abundantly. The British Government has now taken in hand the construction of a complete system of irrigation dams and canals, and very shortly Palestine should once more deserve to be called "a land flowing with milk and honey". In the coastal regions wheat, barley, vegetables, fruits, olives, and the mulberry tree are cultivated. Much of the interior surface is desert, and the remainder is given up to flocks in charge of their Arab shepherds. Gypsum is found in paying quantities, and sandstone and limestone of excellent quality are obtained there. Wine, soap, and olive oil are the principal manufactures.

The greater part of the trade of Palestine is carried on with Great Britain, followed in order by Syria, Egypt, the United States, Germany, France, and Italy. The principal exports are oranges, soap, melons, wheat, wine, and almonds. *Jerusalem*, the chief city, is situated on a rocky plateau thirty-five miles from the coast. It is connected with *Jaffa*, its seaport, by a line of railway. *Haifa* is also an important port.

Trans-Jordan.—Recently that part of Palestine which lies across the Jordan River was formed into an Arab Kingdom under the name of Trans-Jordan. The High Commissioner for Palestine advises and controls the Arab king. The country is mainly desert.

Iraq.—The kingdom of Iraq, formerly Mesopotamia, is now independent, but is under the control of Great Britain under mandate from the League of Nations. In the south the country consists of a level alluvial plain stretching northward from the Persian Gulf for a distance of 400 miles. The plain gradually passes into rolling land, which leads to the mountainous districts in the far north of the country. The waters of the *Tigris* and the *Euphrates* and those of the *Shat-el-Arab River*, formed from their union, overflow their banks in the spring, owing to the mountain floods, so that in the southern part there are immense marshes. The climate is sub-tropical, and from May until October there is no rain. The summers are almost unbearably hot.

Agriculture is the chief occupation of the people. In the north wheat and barley are grown as winter crops, but in the south there is little cultivation except where irrigation is employed. Rice is grown in the marshland along the rivers, and in the hill districts tobacco is cultivated. Dates form an important article of commerce, eighty per cent of the world's supply of this fruit being produced along the banks of the Shat-el-Arab River. Oil has recently become one of the leading exports, and the industry has immense possibilities of further development. Extensive asphalt deposits are also found in many parts of the country. Camels and sheep are raised, and a large trade is carried on in wool and hides. The principal exports are grain, dates, oil, and carpets. Cotton goods and sugar are the main imports. *Baghdad*, at the head of navigation on the Tigris, is the capital and chief city.

Helps.—Find out what you can about the circumstances under which Great Britain assumed control of Palestine. Find out what you can about the Turkish occupation of the country. What will be the probable benefits of British rule? Describe the surface of the country. What are its chief products? Find out about the Jewish University recently established. Describe the surface, climate, and products of Irak. Of what value is it to Great Britain? Why did Great Britain acknowledge the independence of the country? Will it ever have a large European population?

THE BRITISH EMPIRE IN AFRICA

The British Empire in Africa is of enormous extent and is spread all over the continent, except in the extreme north along the Mediterranean Sea. Its area, including protectorates and mandated territory, is nearly 4,000,000 square miles, and its population is about 50,000,000, more than five times as many as are in our own Dominion. Except in the Union of South Africa, there are few Europeans in this vast aggregate of peoples, the greater number of the population being Negroes belonging to one or other of the almost innumerable African tribes. In certain sections there are a number of Arabs, and in the east and south there is a sprinkling of East Indians.

As has been said, the Imperial government has constantly striven to govern the subject races in such a way as to improve their conditions of living and to afford them the utmost protection against their enemies. Perhaps the greatest benefit conferred upon Central Africa by British rule has been the abolition of the slave trade. In British territory, at least, the Negroes are now secure from the murderous raids of the slave hunters.

Leaving out the *Anglo-Egyptian Sudan,* the British sphere in Africa may be divided broadly into three sections—*British East Africa, British West Africa,* and *British South Africa.* In South Africa may be included several small islands lying in the Atlantic Ocean west of the continent.

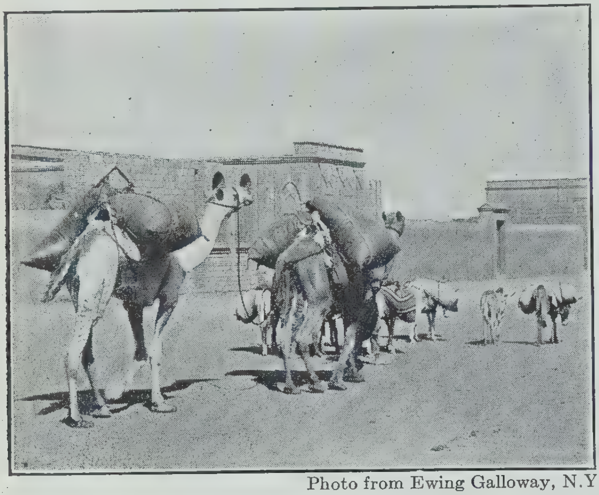


Photo from Ewing Galloway, N.Y.

A Street in Khartum

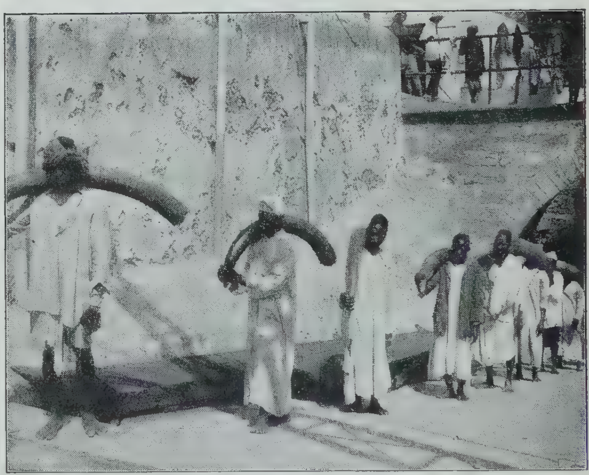
Several years ago Great Britain withdrew from Egypt and recognized its independence. She still, however, retains an interest in the country on account of the Suez Canal. For the present, Great Britain controls the defence of Egypt and is represented there by a High Commissioner.

THE ANGLO-EGYPTIAN SUDAN

The Anglo-Egyptian Sudan.—This large territory extends southward for 1600 miles from Egypt to the borders of the Belgian Congo and Uganda, and from the Red Sea on the east to the confines of Wadai in Central Africa. It contains over a million square miles, with a population of nearly 6,000,000. It is under the joint control of Britain and Egypt.

The country may be divided into two zones. The northern section is practically a continuation of the Sahara Desert, while the southern section is abundantly supplied with water and with fertile land and in some parts is densely forested. In the south also there are huge swamp areas. The *Nile River* traverses the Sudan from south to north, and almost all its great tributaries are within the territory. The Nile Valley occupies the greater part of the country. Running parallel to the Red Sea and also in the west and south are mountainous districts.

In the southern part the rainfall is very heavy, while elsewhere the use of irrigation has largely increased the productiveness of the soil. The chief crops are cotton, millet, sesame, gum arabic, and dates. The Sudan is the chief source of the world's supply of gum arabic. The raising of cattle, sheep, and goats is an important industry. Large numbers of cattle are shipped to Egypt and surrounding countries, as are also hides and skins. Gold is mined somewhat extensively, and there is a large trade in ivory. The imports are cotton goods, flour, iron and steel goods, soap, coffee, tea, coal, and tobacco. The larger amount of the trade is carried on with Egypt, Great Britain being a close second. Under British rule internal communication has much improved, and excellent railway and steamship service is now provided.



Carrying Ivory, Mombasa

Ivory is an important product of East Africa.

The chief town is *Khartum,* the capital, at the junction of the *Blue* and the *White Nile.* Across the Nile from Khartum is *Omdurman,* with a population of 78,000.

Port Sudan is a busy port on the Red Sea, with railway connections inland.

Helps.—On the map trace the boundaries of the Anglo-Egyptian Sudan. Find out what you can about how Great Britain obtained possession of the country. Describe the surface and climate. What part borders on the Red Sea? What is the chief port there? What are the products? What is the importance of the Nile? What is the chief value of the Sudan to Great Britain? What great historic events are connected with Khartum and Omdurman?

BRITISH EAST AFRICA

British East Africa includes *Kenya Colony and Protectorate*, the Protectorates of *Uganda, Nyasaland*, and *Somaliland*, and the islands of *Zanzibar* and *Pemba*, the *Mauritius Islands*, and the *Seychelles Islands*. It also includes the mandated territory of *Tanganyika*, formerly a part of German East Africa.

Kenya.—The Colony and Protectorate of Kenya has an area about equal to that of Alberta. It is for the most part an elevated plateau, being from three to four thousand feet above sea-level, rising in many places to lofty mountain heights and well watered by numerous rivers. It possesses several lakes of considerable size, chief among which is *Victoria Nyanza*. A large part of the surface is grown over with grass and is well adapted for cattle-raising. The climate is hot but dry and is on the whole very healthful, particularly in the highlands. There are about 10,000 Europeans and 25,000 East Indians in the colony.

The coast-line is broken in many places, thus affording several good natural harbors. *Mombasa*, on an island of the same name, is the largest town. It has a commodious and safe harbor and is used by the British navy as a coaling-station. On the opposite side of *Mombasa Island* is *Kilindini* harbor, which is the finest landlocked and sheltered harbor on the east coast of Africa.

The chief industry is agriculture. In the low-lying coastal regions, rice, coconuts, cotton, cassava, and sugar-cane are produced in abundance, while in the highlands, coffee, corn, wheat, and sisal hemp are cultivated to a considerable extent. The live-stock industry flourishes in the highlands, bacon being cured for export as well as for home consumption. The forest areas, particularly in the west and north, are very valuable; mangroves, rubber trees, and ebony grow in large numbers. Trade is carried on largely with the United Kingdom and the British possessions in the East. *Nairobi*, on the edge of the grass-land, is the capital.

Uganda.—The Protectorate of Uganda lies immediately to the west of Kenya Colony. Of its total area more than one-seventh is water. Within its boundaries lie part of Lake Victoria Nyanza, part of *Lake Edward*, part of *Lake Albert*, numerous smaller lakes, and a considerable portion of the course of the Nile.

Photo from Ewing Galloway, N.Y.

Building a House in Uganda

The natives are engaged in thatching the house.

The surface and climate vary in different regions. In the north-east is a low-lying valley of desolate aridity, where the temperature is extremely high and where frequently no rain falls for two years at a time. In the east the land is well forested, broken here and there by vast extents of marsh-land and open stretches of grain-growing country. In this district is situated the giant volcano, *Mount Elgon*. The rainfall there is abundant, but the climate is hot, damp, and somewhat unhealthy. In the west the glaciers and snow fields of the *Ruwenzori Mountains* tend to cool the atmosphere, making the climate pleasant and healthful. Practically the entire population is native, about one-fifth being remarkably intelligent Christians.

Cotton-growing and the cultivation of coffee and Para rubber are the chief industries. These, with oil-seeds, ivory, and hides and skins, are the principal articles of export. Food-stuffs and wearing apparel make up the bulk of the imports. The external trade is carried almost entirely through Kenya by rail to Mombasa.

Nyasaland.—The Protectorate of Nyasaland is named for the lake around the western and southern shores of which it is situated. The seat of government is at *Zomba*, which is provided with a water-power electric light system. The population is composed mainly of Negroes, with a few Europeans and Asiatics.

The surface consists chiefly of mountains and lofty plateaus. Within its borders are three lakes of considerable size, *Lake Nyasa*, the third largest lake in Africa, *Chilwa* or *Shirwa*, and *Chinta*, and one river, the *Shire*, certain parts of which are navigable by small steamers. In the highlands the climate is pleasant and healthful for Europeans, but in the valleys and in the region bordering on Lake Nyasa, it is extremely hot.

The cultivation of tobacco is the chief industry, but cotton and tea plantations are also numerous. The principal exports are tobacco, cotton, and tea, ninety-nine per cent of which go to Great Britain. The imports are chiefly manufactured articles and provisions.

British Somaliland.—The Protectorate of Somaliland lies on the north coast of the east horn of Africa, bordering on the Gulf of Aden. The surface is mountainous, with here and there a fertile river-valley. The rainfall is extremely slight, but the climate is generally healthful. The population consists almost entirely of nomadic peoples of the Mohammedan faith.

The majority of the people are engaged in cattle-raising. The hides and skins exported from the protectorate are noted for their very high quality. Most of them find their way to the markets of the United States. Gum, resins, and ghee, a kind of butter made from buffalo milk, are also important articles of export. The chief imports are rice, dates, sugar, and textiles. *Berbera* is the capital and chief port.

Mauritius.—In the Indian Ocean, 500 miles east of Madagascar, lies the island of Mauritius. It is volcanic in origin and is surrounded by coral reefs, which make its harbors dangerous to navigation. The interior is very picturesque, being composed chiefly of rugged mountains separated by well-watered and very fertile plains and valleys. The rivers are small and unsuited to navigation, becoming raging torrents in the wet season and almost disappearing during the dry months. During the cool and comparatively dry season, which extends from April to November, the climate is pleasant, but throughout the rest of the year it is oppressively hot. The island is visited frequently by severe hurricanes accompanied by very heavy rainfalls, which cause serious damage to crops and property. *Port Louis*, the capital of the island, has a strongly fortified harbor, but the entrance is somewhat difficult.

The natural fertility of the soil is immensely increased by the use of guano, which is one of the chief imports. Though the soil is suitable for the cultivation of many kinds of tropical produce, almost all the people are engaged in the production of sugar, the only article of export of any importance.

Zanzibar.—The island of Zanzibar is the largest of the coral islands on the African coast, being forty-eight miles long and fifteen miles wide. It is separated from the mainland by a broad channel, which is made dangerous to navigation by the presence of numerous reefs. Thirty miles to the northeast lies the island of *Pemba*. The population of the islands consists of African natives, Arabs, and British Indian subjects, with a small number of whites. The rainfall is abundant, and the moisture combined with the excessive heat makes the climate very trying for Europeans. The chief town is *Zanzibar*.

The bulk of the world's supply of cloves is produced on these two islands, there being over 3,000,000 trees in bearing. Many thousands of acres also are devoted to the production of coconuts, so that copra is an important article of export.

Seychelles.—The island of Seychelles and its dependencies are a group of ninety islands in the Indian Ocean about 1,000 miles from the coast of Africa. The population is composed chiefly of Negroes and natives of India. The islands are for the most part mountainous, and are well watered by many rushing torrents. They are very beautiful, and their unusual fertility has caused them to be called the "Garden of Eden." The temperature is moderate, the rainfall abundant, and the climate pleasant and healthful.

The wealth of the colony consists almost entirely in its agricultural products and its fisheries. The chief products are coconuts and cinnamon and other spices. The principal exports are copra, guano, cinnamon-oil, clove-oil, tortoise-shell, coconut-oil, and vanilla.

Tanganyika.—The territory of Tanganyika extends along the coast of the Indian Ocean for a distance of nearly 500 miles. It includes within its boundaries the adjacent islands, chief among which is *Mafia Island*, with an area of 200 square miles. The inhabitants are mainly natives.

The surface along the coast is low and flat and is composed largely of coral. In the interior it rises to broad plateaus and has several mountain-peaks of over 7,000 feet in height. The country is well watered by numerous rivers, which, however, are not navigable except for a few miles from their mouths. The climate is for the most part warm, though on the plateau the nights are frequently very cool. Rain falls from November to April, the rest of the year being dry.

Forests abound in the north and east furnishing several varieties of valuable timber—ebony, gum copal, rubber, and bamboo. Precious stones, such as garnets, agates, moonstones, and topaz, are found in large quantities. Sisal hemp, cotton, copra, coffee, ground-nuts, and grain are produced in abundance on the plantations and are the chief articles of export. The largest seaport is *Dar-es-Salaam*, which is accessible to ocean-going vessels, and is connected by railway with several inland towns.

Helps.—Read the description of Central Africa on page 197. On the map trace the boundaries of each of the British possessions in the eastern section. Show how each is related to the other. Describe the surface, climate, and chief products. On the map locate the chief lakes and rivers. What is the commercial value of each of these? What is the value to Great Britain of each of the protectorates and colonies in East Africa? Following the shortest route, how would you reach London from each of the colonies?

Photo from Ewing Galloway, N.Y.

Native Granaries

The natives grow grain for their own use. The grain all belongs to the tribe as a whole and is distributed from time to time to each person as required.

BRITISH WEST AFRICA

British West Africa includes the *Colony and Protectorate of Nigeria; Gambia;* the *Gold Coast*, including *Ashanti* and the *Northern Territories;* the *Colony and Protectorate of Sierra Leone;* and the mandated territories of *Cameroon* and *Togoland*.

Nigeria.—Nigeria, to which is attached for administrative purposes the mandated territory of *Cameroon*, is the largest British colony in West Africa. The coast-line extends for about 500 miles along the Gulf of Guinea, and on the north-east corner the colony touches on *Lake Chad* for over a hundred miles. On the land side it is entirely surrounded by French territory. There are only about 3,200 Europeans in Nigeria, the majority of the population being an industrious and intelligent type of Negro.

The surface of Nigeria may be divided into three regions, the delta region, the forest region, and the plateau region. The *Niger River* flows in a south-easterly direction through the protectorate and receives as its tributary the waters of the *Benne River*, which flows west across the plateau. Two other rivers flow into the huge delta of the Niger, the *Benni* and the *Brass*. There are several other smaller rivers which flow into the Gulf and form deltas along the coast. The delta region is swampy and extends back a distance varying from forty to seventy miles. The firm ground beyond the delta rises gradually and is densely forested. North of the forest region the plateau which extends over the protectorate begins, but nowhere is it more than 6,000 feet in height. The surface is rolling, with isolated hills, and is covered with thin forest. Along the French frontier in the north the surface is barren, covered with loose sand.

A native Market in Nigeria

In common with all the other British colonies in West Africa, Nigeria grows a great deal of cotton. Other products are rubber, ground-nuts, palm-oil, palm-kernels, coffee, cocoa, drugs, and tobacco. Live stock flourishes, and there is a large trade in hides and skins. Ostrich feathers, ivory, and mahogany are other important products. The mines, which have been worked for centuries, produce a large quantity of tin, some iron and lead, and a little coal and silver. The chief exports are cotton, ground-nuts, palm-oil, palm-kernels, cocoa, tin ore, and hides and skins. The larger part of the trade is with Great Britain, and a comparatively small part with the United States.

Native Village in British West Africa

Lagos is the capital and chief port. It has an excellent harbor, and there is a floating dry-dock in the lagoon. *Forcados* has anchorage for small vessels and has large machine shops. It rains there almost every day during the year.

Gambia.—The colony of Gambia lies on the Atlantic coast in West Africa and extends about 205 miles into the interior in a strip six miles wide on both sides of the *Gambia River*. On the north, east, and south it is bounded by French territory. The inhabitants are chiefly Negroes.

Along the banks of the Gambia River the country is swampy. Behind this there is bush, and much of the land is cleared for cultivation. Lions, leopards, hippopotami, crocodiles, and monkeys abound. The climate is fairly healthy during the dry season, and the war against the mosquito is being carried on with much success. The principal exports are ground-nuts and palm-kernels. A considerable export trade is done with France, but the bulk is now with Great Britain. *Bathurst*, the capital, is situated on *St. Mary Island*, in the estuary of the Gambia.

The Gold Coast.—The colony of the Gold Coast extends along the Gulf of Guinea for a distance of 334 miles between the French

Ivory Coast and Togoland. To the north of it and under the jurisdiction of its Governor are *Ashanti* and the *Northern Territories*.

The surface is level near the coast and hilly in the interior, rising in some places to isolated peaks over 2,000 feet in height. The climate is hot and damp and is so unhealthy for Europeans that only about 2,000 of them live in the entire colony. The soil is exceedingly fertile. The chief industry is the production of cocoa, which is entirely in the hands of the natives. The export of cocoa has increased from a parcel weighing eighty pounds in 1891 to the enormous total of nearly 450,000,000 pounds in 1925.

Rich forests abound in the western part of Ashanti, where valuable supplies of mahogany, cedar-oil, rubber, and gum copal are produced. The chief mineral wealth of the colony is gold dust, which ranks next to cocoa in the list of exports. The principal products in addition to those already mentioned are corn, bananas, ground-nuts, millet, rice, and tobacco. Cattle, sheep, and goats are also exported to a limited extent.

The chief towns are *Accra*, the capital of the Gold Coast, and *Coomassie*, the capital of Ashanti. *Sekondee*, an important seaport, has modern railway workshops and an electric power plant which supplies lighting for the town.

Sierra Leone.—The colony of Sierra Leone (Lion Mountain) borders upon the South Atlantic for a distance of 180 miles with a depth of from eight to twenty miles. In 1896, a protectorate was declared over the hinterland extending inland about 180 miles. The entire territory is now known as the *Colony and Protectorate of Sierra Leone.* Many of the Negro inhabitants have been Christianized, but there are a great many Mohammedans.

A low coastal plain extends inland from thirty to fifty miles. Beyond this is a plateau which has an elevation of from 800 to 3,000 feet. In the north-west there is a great deal of low land, while in the south-east the surface is hilly and densely forested. The entire country is well watered, there being six large rivers, some of them magnificent streams. The coast-lands are so unhealthy that Sierra Leone is known as "the white man's grave." The climate of the interior, however, is not nearly so dangerous to Europeans. The wealth of the country is drawn largely from its trees, the palm, the kola-nut tree, and the rubber plants. Rice, cassava, corn, cotton, and ginger are cultivated on the plantations. In the protectorate there are large numbers of cattle. The chief exports are ginger, kola-nuts, palm-kernels, and palm-oil.

Freetown is the greatest seaport in West Africa. It has a superb harbor and is a railway terminus. It is also a military station and a coaling-station for the navy.

Cameroon.—The mandated territory of Cameroon lies between British Nigeria and the French Congo and extends from the Gulf of Guinea northward to the shores of Lake Chad. The inhabitants are chiefly Negroes.

The surface resembles that of the eastern part of Nigeria. In the coast region it is swampy, and the climate is somewhat unsuited to Europeans. The whole district is of extraordinary fertility. The chief exports are palm-oil and kernels, rubber, cotton, ivory, cocoa, tropical fruits, and kola-nuts, together with various hardwoods and ebony. Gold and iron are mined to a limited extent. *Victoria* is the chief port.

Togoland.—Bounded by the Gold Coast Colony on the east and French Dahomey on the west is the mandated territory of Togoland. For administrative purposes it is attached to the Gold Coast Colony. There are only about fifteen Europeans in the territory. The surface and climate are similar to those of the adjacent Gold Coast. The principal exports are palm-kernels and oil, raw cotton, cocoa, and kola-nuts

Helps.—Read the description of Central Africa on page 197. On the map trace the boundaries of each of the British possessions in the west. Describe the surface. Is the climate suited to Europeans? What products are specially required by the British market? How far is Nigeria from London? What is the shortest sea-route? What is commercially the most important of the West African possessions? Why? Trace the coast-line of these colonies and protectorates. Describe the character of the coast-line. Where are the good harbors located? Locate the chief towns and account for their importance. What value is each possession to Great Britain?

BRITISH SOUTH AFRICA

British South Africa includes *Northern Rhodesia*, *Southern Rhodesia*, the *Union of South Africa*, the mandated territory of *South-West Africa*, the *Bechuanaland Protectorate*, *Basutoland*, *Swaziland*, and a number of small islands in the Atlantic Ocean.

NORTHERN AND SOUTHERN RHODESIA

Northern Rhodesia.—The colony lies south of the Belgian Congo and geographically belongs to Central Africa. The climate is hot, damp, and unhealthy, and malaria is very prevalent. The country is not well suited to Europeans; in fact, the total European population numbers only about 3,500, while there are close to a million natives.

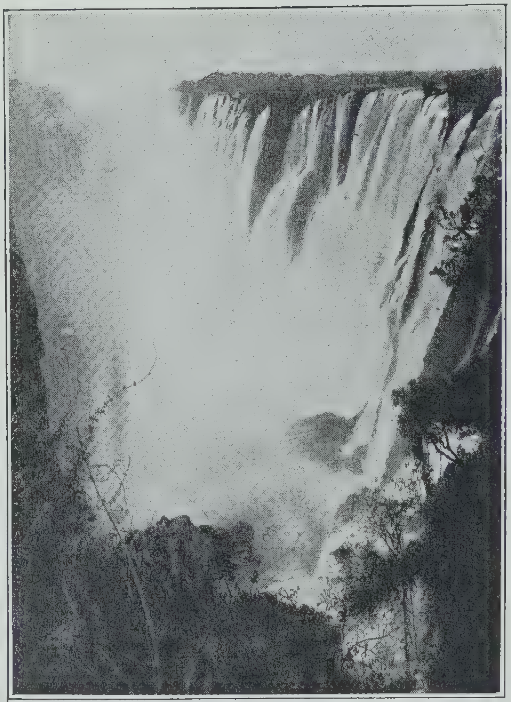


Photo from Ewing Galloway, N.Y.

The Victoria Falls

The surface is for the most part a high plateau covered with forests valuable for their timber. The chief rivers are the *Zambesi*, *Kafue*, and *Chambesi*, which are navigable for considerable distances. The heavy rainfall in the north produces good grazing-land, so that the raising of cattle is an important industry. Corn, cotton, tobacco, wheat, and many kinds of European fruits are the chief agricultural products. Lead is the most valuable mineral, but gold, copper, and zinc are also mined. Lead, tobacco, and live stock are the principal exports. The capital is *Livingstone*, on the Zambesi River.

Southern Rhodesia.—The surface of Southern Rhodesia is a great tableland, about one-third of its area having an altitude of over 3,000 feet. One high ridge runs from the Zambesi River in the north to the *Limpopo River*. Forming a part of this ridge are the *Matopo Hills*, where Cecil Rhodes is buried, and along the slopes of which are located the chief towns—*Bulawayo*, *Salisbury*, and *Gwelo*.

There is an extensive system of waterways formed by the Zambesi and the Limpopo with their tributaries. These, however, are broken by falls, and are, therefore, navigable only in certain sections and in many places only in certain seasons. The picturesque falls at *Victoria* on the Zambesi provide electric power for a growing factory district. The climate, especially in the higher parts, is pleasant and healthful for Europeans. The nights are always cool, and frost is not uncommon. In spite of this fact, however, of the total population of over three-quarters of a million, only about 33,000 are of European descent.

Over one-half of the total acreage under cultivation is devoted to the production of maize. Wheat can be grown, if assisted by irrigation. Tobacco and cotton are rapidly becoming important crops, while the cultivation of oranges and lemons and other fruits is continually increasing. Cattle-raising is also a leading industry. Manufacturing is carried on in the districts where water-power is available. The chief products of the factories and mills are bacon, soap, cheese, canned meat, flour, and oil.

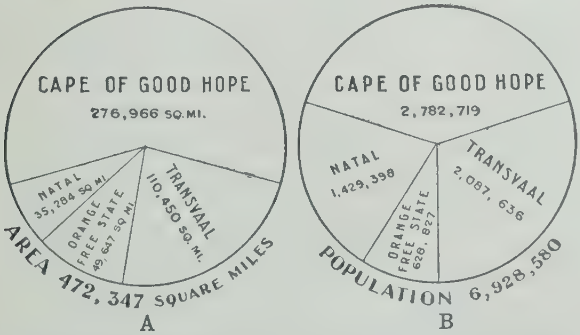
The country is immensely rich in minerals—gold, silver, copper, mica, asbestos, and coal. These minerals, with cattle, tobacco, and cotton, are the chief exports. Food-stuffs and wearing apparel form the bulk of the imports, more than half of which are brought from the United Kingdom.

Helps.—On the map trace the boundaries of Northern and Southern Rhodesia. Compare them as to surface, climate, and products. Locate each in its relation to the equator. Are these colonies suited to white men? What are the chief products? the chief industries? the chief exports? What is the value of the two colonies to Great Britain? Locate the chief towns and account for their position. Find out all you can about Cecil Rhodes.

THE UNION OF SOUTH AFRICA

Position and Extent.—The Union of South Africa occupies the southern part of the continent, extending on the eastern side as far north as the Limpopo River. Its shores are washed on the west and south by the Atlantic Ocean and on the east by the Indian Ocean. The northern section is shut out from the Indian Ocean by the Portuguese colonies. In area the Union is somewhat larger than the province of Ontario.

Government and People.—In 1910 the colonies of the Cape of Good Hope, Natal, the Transvaal, and the Orange River were united under the name of the *Union of South Africa*, the colonies becoming provinces of the Union under the names of the *Cape of Good Hope*, *Natal*, the *Transvaal*, and the *Orange Free State*. The Union is one of the great self-governing Dominions of the Empire, its government very much resembling that of Canada. The administration of affairs is carried on at *Pretoria* in the Transvaal, but the Legislature holds its sessions at *Cape Town* in the Cape of Good Hope.



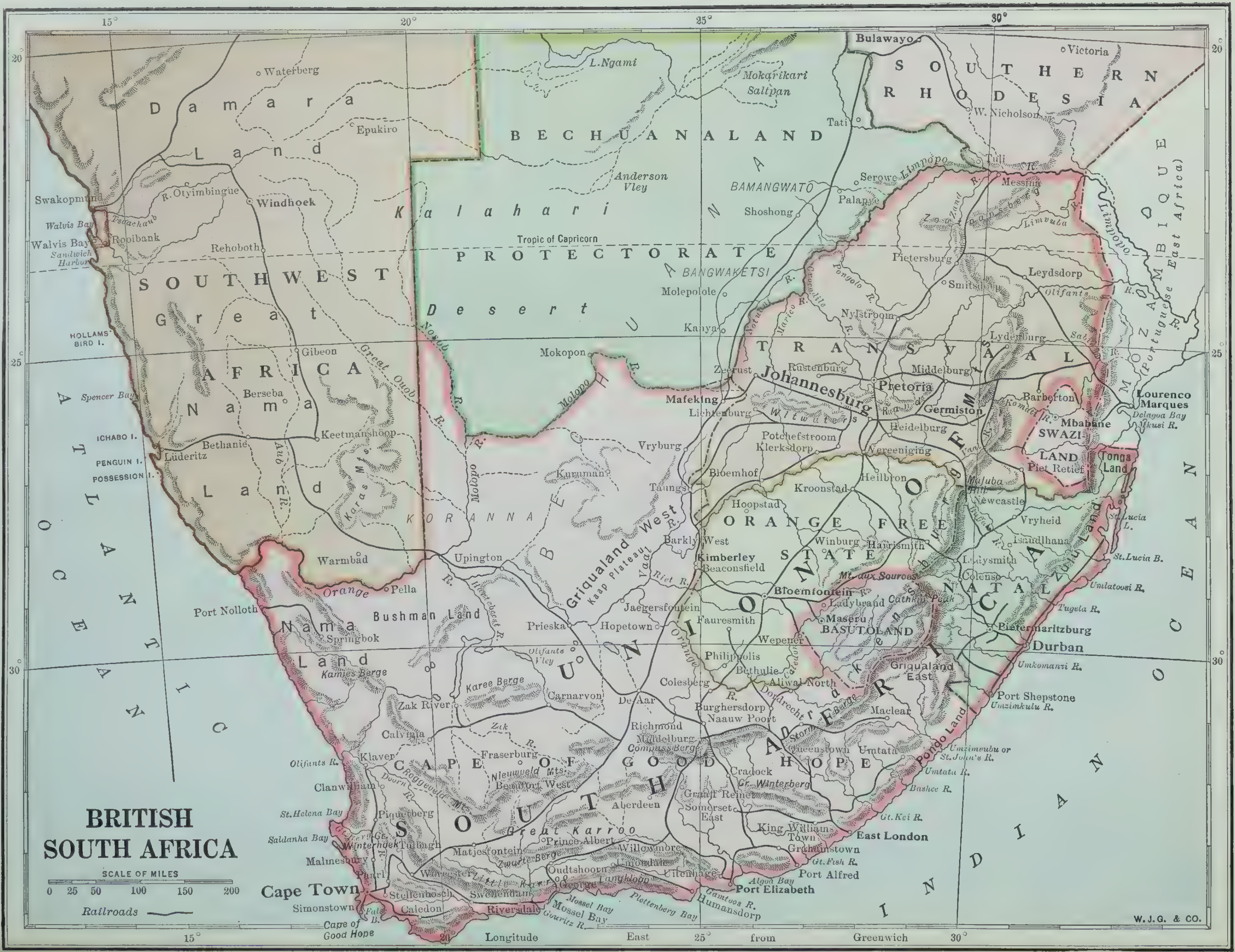
Area and Population of the Union of South Africa
A. Area. B. Population.

Of the total population of nearly seven millions, those of European descent number a little over a million and a half, that is, about twenty-two per cent. The larger number of the whites are the descendants of the original Dutch settlers. The majority of the native blacks are *Kaffirs*, a strong, stalwart race. Most of the unskilled labor employed is black, but East Indians and Malays have been brought into the country, particularly into Natal, to work on the plantations and in the mines. Of late years, however, the government of India has taken steps to prevent any considerable emigration of its people, so that the East Indian population is not increasing.

A Group of Kaffirs

Coast-Line.—The coast-line of the Union is but little indented and affords few natural harbors. There are a number of drowned valleys at the mouths of rivers, but, owing to the presence of sandbars, these can be kept open for shipping only by constant dredging. There are no peninsulas of any size or any large islands off the coast to provide protection for vessels. The unattractive aspect of the country from the sea probably accounts for its late settlement by Europeans.

Surface.—One of the most striking surface features of the Union is its high average elevation, more than forty per cent of the country lying 4,000 feet above sea-level. Only the coast-lands, which extend back from twenty to 250 miles, are under 1,000 feet above the sea. There is very little rain along the low-lying coastal belt on the west, but heavy sea-fogs cause a thick growth of bush on the sandy ground. From the coast-lands rise with alarming suddenness ranges of mountains which shut off the interior plateau. The *Drakensberg Range* slopes steeply to the coast both to the east and to



BRITISH SOUTH AFRICA

the west, the highest peak, just on the boundary line between Natal and the Orange Free State, rising to over 11,000 feet. The province of Natal on the east consists chiefly of the steep slope of this range. On the south coast, separated from the coastal plain by a range of hills, is a narrow stretch of plateau known as the *Little Karroo.* "Karroo" is a native word meaning dry or arid. Rising behind it like terraces are the *Great Karroo* and the *Upper Karroo.*

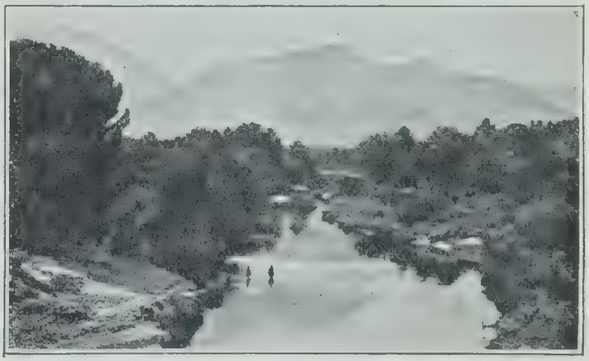
The Great Karroo, which until the beginning of the last century was regarded as desert and was uninhabited, is gradually being more and more settled. It is the dry region. The soil along the river banks is very fertile, but elsewhere the vegetation is largely scrub, grass appearing only in very wet years. The Upper Karroo is a country of vast, treeless plains, from which rise flat-topped hills. It has a wide range of rainfall and suffers from great extremes of temperature. The soil is very poor, and the frequent droughts cause the streams to dry up at intervals. The north-western part is practically desert, but in the south and east there are many farms.

At the eastern edge of the Upper Karroo the High Plateau commences and extends over the Orange Free State and the southern part of the Transvaal, where it is known as the *High Veld.* It has a rolling, grassy surface, and its pleasant, healthful climate makes it the most favorable district in the Union for white people. The northern part of the Transvaal is somewhat hilly, with level plains between, and gradually slopes away towards the Limpopo River. In this section the plateau is wooded and is known as the *Bush Veld.*

A curious feature of the country is the salt-pans which occur in many places in the drier regions. These are flat-bottomed depressions in the surface of the earth and often cover an area of several square miles. They have no outlet, and, after the water which falls into them during the rainy season is evaporated by the sun, a crust of coarse salt of the best grade covers the bottom of the basin. Enough salt is obtained from these pans to supply the needs of the entire Union.

Rivers.—The rivers of the Union are almost useless for internal navigation. Owing to the terraced surface of the country, they are necessarily steep and swift, with falls and rapids on their lower courses. On the plateau they run generally in deep valleys, making them difficult of access. Moreover, the supply of water in most of the rivers is very uncertain, the low rainfall causing many of them to dry up completely during the dry season. During the wet months, on the other hand, sudden floods frequently cause considerable damage and make irrigation schemes difficult.

The principal river is the *Orange* with its tributaries, the *Vaal* and the *Caledon.* The Orange rises on the west side of the Drakensberg range and flows westward into the Atlantic Ocean. It is about 1,000 miles in length. In the dry season it is not navigable, and in the wet season it floods the surrounding country. At its mouth is a bar, which greatly hinders navigation. The Vaal is about 500 miles long. On the south-east is the *Great Fish River*, which does not seem to be affected by the dry seasons, as it flows at all times of the year.


A beautiful Valley in the Cape District

Climate.—The climate of the Union is determined not so much by the latitude as by the elevation of the land. In the coast region of Natal the climate is almost tropical, while on the higher plateaus the temperature is remarkably uniform. Further, the eastern and south-eastern shores are washed by the warm waters of the Mozambique current, while the Cape peninsula is influenced by the cold waters from the Antarctic.

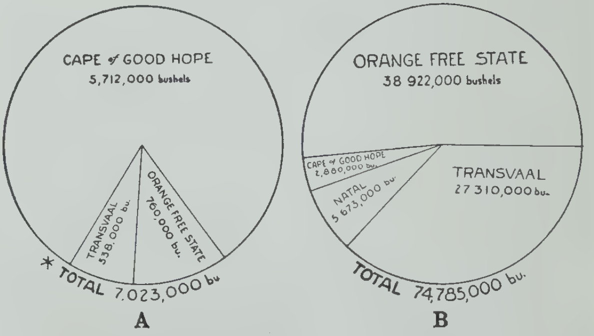
There are two distinct seasons of rainfall. The south-east trades sweep in over the Indian Ocean, bringing rain to the whole east coast during the summer season, which extends from October to March. The warm, heavy rains are favorable for growing such crops as corn, tobacco, tea, and sugar-cane. The winds, as they pass over the mountains that fringe the coast, become dry, so that the western part of the country has summer drought. On the other hand, the winter winds bring rain to the western section, but are nearly dry when they reach the east coast. Grains grow well under conditions of winter rain and summer drought which prevail in the western section.

Angora Goats

On the plateau the summer days are exceedingly hot, but the dry, clear climate during the winter is healthful and bracing and quite suited to Europeans. Frosts are unknown along the coast, but occur frequently in the interior during the winter months. Thunderstorms, also, are of frequent occurrence.

Agriculture.—Agriculture in all its branches, including grain-growing, stock-farming, and dairying, is the chief industry of the country. The immense plains and valleys of the interior and the warm coastal plains lend themselves to stock-raising on a vast scale. The sheep-farms of the interior are usually large, ranging from three to fifteen thousand acres and pasturing from three to ten thousand sheep each. The cultivated farms are comparatively small in area. As only a few inches of rain fall each year, the soil does not produce abundantly, and considerable land is required to grow sufficient food for a small number of animals. In certain dry districts, where there is no irrigation, as much as eight acres are required to pasture each sheep. In the well-watered districts, however, one acre is sufficient. Irrigation, though hard to control in some sections of the country owing to the flooding of the rivers, is coming more and more into general use.

Immense flocks and herds roam over the ranges of the Union. The sheep number about 35,000,000, about one-third as many as thrive on the pastures of Australia. From these the annual clip of wool is about 150,000,000 pounds. Cattle are next in importance, followed by Angora goats, valuable for their hair. Goats' hair is known in commerce as mohair. The native goats are raised mainly for their milk and flesh. Horses are somewhat difficult to rear owing to the frequent outbreaks of sickness, but there are large herds of mules and donkeys. The Union has a large and increasing export trade in hides, skins, and tallow.



Production of Wheat and Corn in the Union of South Africa

A. Wheat. *Includes 13,000 bu. produced in Natal. **B. Corn.**

The ostrich industry is very valuable. It is carried on chiefly in the Little Karroo and on the High Veld, where the climate is particularly well suited to the production of the finest plumes. The farms are large; at least 6000 acres are necessary for the support of 300 birds. As each ostrich may have a life of from sixty to seventy years and yields about 300 plumes and tips every seven months, it is easily seen that ostrich-farming is profitable. A single bird, when sold for breeding purposes, often commands a price of $2,500. There are about one hundred and sixty thousand ostriches in the Union. In order to protect the home industry, the government has placed a very heavy tax on the export of the eggs.

Dairy-farming is proving very successful in Natal and in the Cape of Good Hope, where large quantities of butter and cheese are now manufactured both for home use and for export. The raising of pigs, fed mainly on the corn of the country, is becoming more and more profitable. It is interesting to note that about forty per cent of the cattle, pigs, and poultry raised in the four provinces are owned by the native Kaffirs.

An Ostrich-Farm

The Union is one of the chief corn-producing countries of the world, as the hot summers are well suited to its growth. The crop includes both Indian corn, known as mealies, and Kaffir corn, known as millet. The corn grows to such a height and with such abundant foliage that during the summer season the fields are a striking feature of the landscape. It forms the principal food of the natives. Wheat, oats, barley, and rye are grown, but only in the districts where there is sufficient rainfall. The oats are often cut green, dried, and used as cattle feed. Lucerne, which also requires plenty of moisture, is being increasingly cultivated. It affords excellent pasture for cattle and ostriches, and its cultivation enriches the soil.

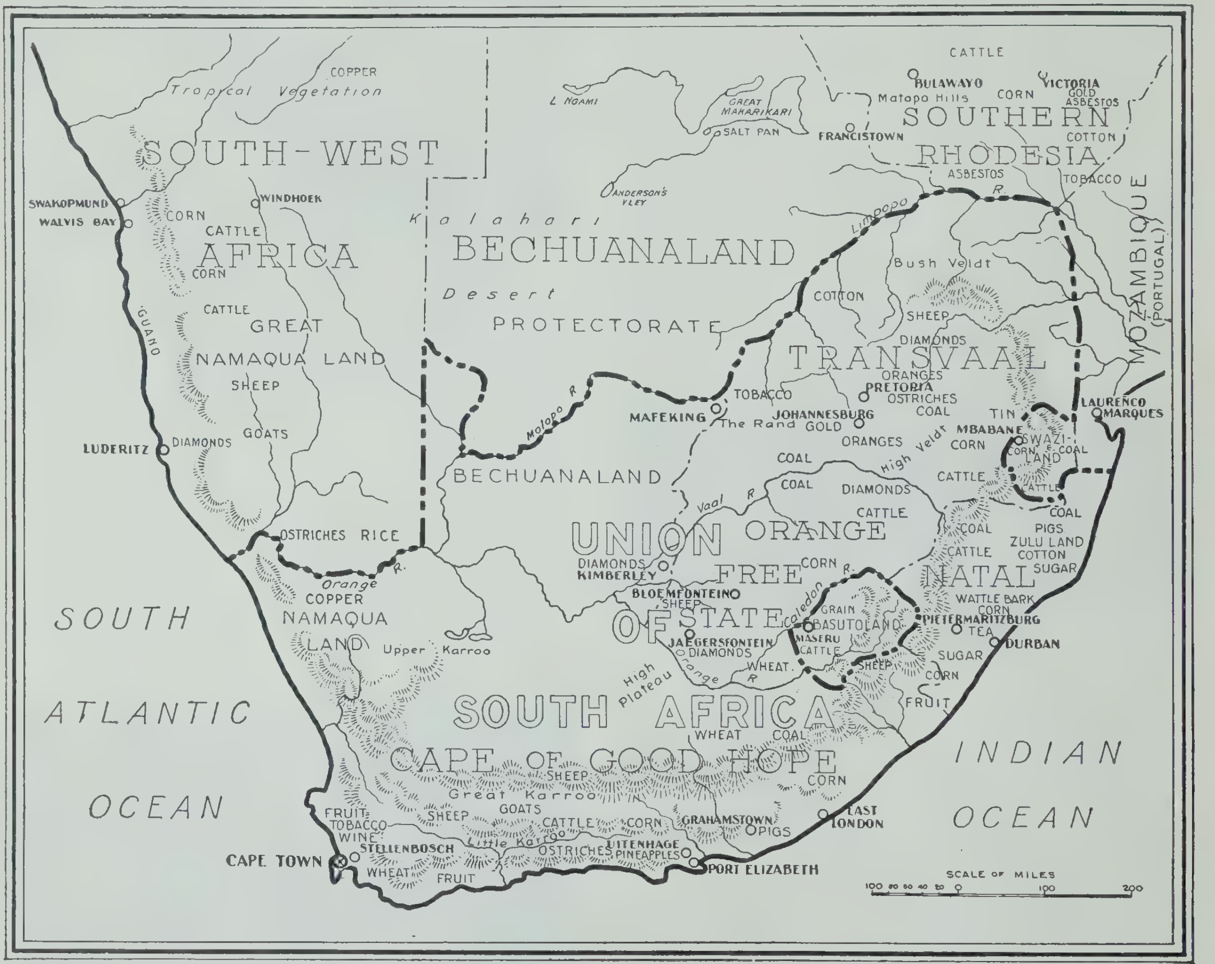
On the semi-tropical coastal plain of Natal, tea, sugar-cane, and cotton are cultivated. East Indians are employed on the tea and sugar-cane plantations and Kaffir women and children in the cotton fields. Only enough tea is produced to meet the local demand, but there is a small surplus of raw sugar for export. Tobacco is cultivated in all parts of the Union; in 1925 the yield was over twelve million pounds. The bark of the acacia tree, which is known as wattle bark, much used in tanning, is becoming increasingly valuable as an article of export.

Photo from Ewing Galloway, N.Y.
A Government Experimental Farm, Transvaal

All kinds of European fruits can be raised, the hardier kinds in the south-west and in the inland regions, and the tropical fruits along the coast in the south and east.

Photo from Ewing Galloway, N.Y.
A Pineapple Plantation in Natal

Under government supervision the fruit-growing industry is so organized and regulated that fresh fruit is placed in excellent condition on the English market. As it reaches England when fruit is scarcest there, it brings a high price. Dried fruits, such as raisins, sultanas, prunes, apricots, etc., are shipped in large quantities to foreign countries. The growing of grapes, both for table use and for the manufacture of wine, is of considerable importance, particularly in the Cape of Good Hope.

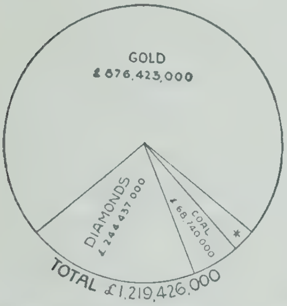


Products of British South Africa

Mining.—To the world at large the chief importance of the Union lies in the fact that it is almost the only source of diamonds and is the principal producer of gold. It is not too much to say that the discovery of the vast mineral wealth underlying the soil in the South African provinces completely changed the destiny of the country. For instance, the High Veld of the Transvaal, which was at one time regarded as almost useless, is now the greatest gold-producing district of the world. The discovery of gold almost at once gave rise to political troubles, which in the end resulted in the formation of the Union of South Africa.

The chief minerals are gold, found in the Transvaal; diamonds, found in the Cape of Good Hope, in the Orange Free State, and in the Transvaal; coal, found in all four provinces; copper; lead; and tin. Gold is by far the most important of the minerals. Since the mines were opened, gold to the value of four and a quarter billion dollars has been taken from them, while in 1925 the value of the product reached the large sum of $200,000,000.

The principal gold fields are in the vicinity of *Johannesburg* in the *Witwatersrand* (white water ridge) district, more familiarly known as the *Rand*. The region, which is barren with a cold climate, lies on the very roof of South Africa, about 7,000 feet above the sea. The mines are on the slope of a ridge, averaging in height 300 feet above the level of the surrounding country and extending east and west for more than a hundred miles. Some of the mines are over a mile in depth. The gold is obtained by crushing, so that mining is an expensive operation. Fortunately, coal is near at hand and thus provides an easy and cheap means of generating power to work the gold mines. The miners are chiefly Kaffirs.



Mineral Production of the Union from earliest Date

*Copper, £24,412,000, and Tin, £5, 414,000

The largest diamond mines in the world are at *Kimberley* in the Cape of Good Hope. The diamonds are obtained from the crushed and washed volcanic mud in which they occur. The mines are fenced with barbed wire and are worked by Kaffirs, who are hired for terms of three months. During this time the miners are not allowed to leave the works and are confined within "compounds", enclosed by wire nettings. They are well-fed, comfortably lodged, and highly paid, but they are very carefully watched to prevent the stealing of the valuable stones. The white employees live in model villages close to the mines. Other diamond deposits are at *Jaegersfontein* in the Orange Free State. Up to the present, the mines have yielded diamonds to the value of about one and a quarter billion dollars. Of course, the diamonds, as they come from the mines, are in the rough, and must be cut and polished before being placed on the market.

Photo from Ewing Galloway, N.Y.

A Gold Mine in the Rand District

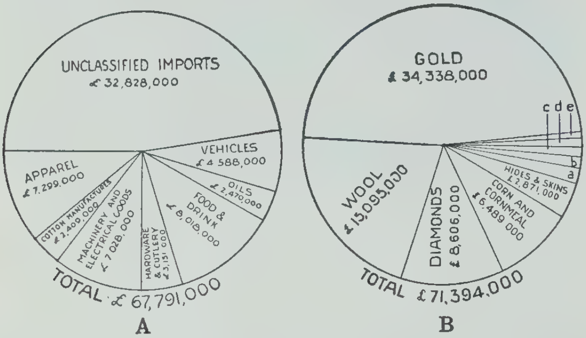
Photo from Ewing Galloway, N.Y.

A Mud Hoist at a Diamond Mine

In addition to the coal found near Johannesburg, there are valuable mines in Natal and some less valuable in the Cape of Good Hope. Coal is found in seams from twenty to thirty feet thick and close enough to the surface to be easily mined. The South African coal deposits are of immense value not only to the Union but to the whole continent, owing to its great distance from the important coal fields of the world. As there is very little wood and no water-power available in the Union, coal has been invaluable in the development of the gold and diamond mines. A large number of ships from all parts of the world depend upon the Union ports to replenish their coal-supply.

Of the other minerals, copper is mined in the Cape of Good Hope, but not in large quantities. Some silver, tin, lead, and asbestos are found, while the Union is the world's largest producer of corundum. It is important to note that the minerals in South Africa occur in districts which as a rule are fit for nothing else, and which otherwise would have remained unpopulated.

Forest Wealth.—The forest wealth of the Union is not great. The wooded regions are chiefly in the Cape of Good Hope and Natal, on the sides of mountains facing the ocean. The trees are principally evergreens. Most of the woods suitable for lumber are cut for home consumption. The severe droughts and the short rainy season tend to stunt the growth of the trees, and scrub forests, therefore, are the rule. Some of the native trees are very peculiar. Among these are the stinkwood and the sneezewood. The former gives forth, when cut, a most disagreeable odor, and the latter compels a violent sneezing. The wood of the stinkwood is used in building and for making the Cape bullock-wagons, and that of the sneezewood, owing to its hardness, in the construction of piers, wharves, and bridges. One of the most beautiful trees is the silver tree, so called from the appearance of its leaves. It grows to a height of about thirty feet and is valuable as firewood.



Imports and Exports of the Union of South Africa

A. Imports. B. Exports. (*a*) Bark, £1,109,000. (*b*) Coal, £1,071,000. (*c*) Angora hair, £837,000. (*d*) Food, drink, and tobacco, £761,000 (*e*) Ostrich feathers, £204,000, and Blasting compounds, £13,000.

Fishing.—The sea-fisheries of South Africa are important. The chief fish are the snook, which weighs up to ten pounds; the steenbras, which sometimes weighs as much as twenty pounds; and the gheelbeek, averaging from forty to fifty pounds. Crayfish, lobsters, and soles are also caught in large numbers. The fish caught are no more than sufficient for home consumption, but canned lobsters are now being exported. The whaling industry flourishes in the waters of the Cape of Good Hope.

Fishing is poor in the inland waters. In some lakes which are full of water only during the rainy season there are found large numbers of fish, which, during the dry season, burrow down into the mud at the bottom of the lakes before it becomes hard. Under government supervision a number of streams have been stocked with trout.

Manufacturing.—Manufacturing is not as yet carried on extensively, but considerable progress has recently been made. Naturally, many of the manufactures are closely connected with the stock-raising industry, such as woollens, tanning, soap, candles, boots and shoes, and leather goods. Tobacco and wine are two of the chief products. Jam and preserves and dried fruits also are becoming leading manufactures. In late years paper, made from a native wild grass, and bottle glass have been added to the list of factory products.

Exports and Imports.—The chief exports of the Union in order are gold, wool, diamonds, hides and skins, corn, coal, mohair, tanning bark, and ostrich feathers. The imports are mainly cottons and woollens, wearing apparel, heavy machinery, iron and steel goods, food-stuffs, vehicles, oils, and lumber. Almost all the exports are sent to the United Kingdom, with a comparatively small amount to the United States. About two-thirds of the imports are from Great Britain and the British colonies. Canada has a considerable trade with the Union in lumber, agricultural machinery, automobiles, and boots and shoes.

Transportation.—Owing to the unbroken nature of the long coast-line, there are comparatively few good ports in the Union. The most important are Cape Town, *Port Elizabeth*, *East London*, and *Durban*. *Lourenco Marques*, on *Delagoa Bay* in Portuguese territory, is the natural outlet for the Transvaal. Most of the shipping is British, although vessels from all over the world, particularly from France, Japan, and the United States, call at and trade with the ports of the Union. Canada now has direct shipping connection with South Africa. Communication between the ports is carried on principally by sea, as it is very difficult to construct a coastal railway. Owing to the difficulty of surmounting the rim of the interior plateau, the railways from the coast have very steep grades and are expensive to operate in the coastal sections. Once the plateau is reached, railway construction and operation is easy.

The Union is comparatively well supplied with railways, all the principal cities and towns being connected. The main line runs from Cape Town to *De Aar* junction, where it divides, one branch running to Kimberley and thence to *Mafeking* and to Bulawayo in Southern Rhodesia, and the other through *Bloemfontein* and Johannesburg to Pretoria. Nearly all the railways are now merged into one system known as the *South African Railways*, owned and operated by the government. There are about 11,000 miles of railway under government control, and, in addition, about 600 miles privately owned.

Transportation in the interior of the country, where railways are lacking, is carried on by means of bullock-carts, sixteen or eighteen oxen being attached to the vehicle. The oxen can drag a load of four tons some twenty miles in a day. Mules and donkeys are also used for transport.

THE PROVINCES OF THE UNION

The Province of the Cape of Good Hope.—The Cape of Good Hope has an area somewhat larger than that of Alberta. Its greatest breadth, from north-west to south-east, is about 800 miles, and its greatest length is almost the same. It includes the most southerly part of the continent and has a coast-line of 1,300 miles. Of its total population only about one-quarter are of European descent, the remainder being Kaffirs and other native races. In the province there are about 7,000 Asiatics.

Agriculture is the main industry. Sheep-raising is of prime importance, and much wool is exported. Mohair is a leading article of commerce. Cattle take a secondary place, as do also horses. Fruit-growing in the south-west section is becoming a valuable industry; the fruit, including oranges, lemons, peaches, plums, and apricots, is shipped to Great Britain in cold storage. Olives also grow well. Tobacco is much cultivated, as are oats, wheat, corn, and barley in the order named. Ostrich-farming employs many people, particularly in the region of the Little Karroo. The diamond mines at Kimberley have an enormous output and add materially to the wealth of the province. Coal, copper, and gold are mined, but the output is not large.

The province has a number of quite large cities and towns. *Cape Town*, the seat of the Legislature of the Union and the capital of the province, has a magnificent situation on the south shore of *Table Bay*, at the south-west corner of the continent. The plain over which it is spread is enclosed by mountains. Behind the city, *Table Mountain* raises its massive walls, two miles in length and 3,500 feet in height, while on the east and west the mountains are only a little less lofty. The harbor, which is much exposed to the winds,

Photo from Ewing Galloway, N.Y.

Cape Town

Behind the city is Table Mountain. The mist of clouds which frequently covers the top of the mountain is called "The Tablecloth."

has been protected by breakwaters, so that the largest ships find safe anchorage. The dock accommodation is ample. There are many handsome public buildings, including the Houses of Parliament, the Public Museum, and the University. The wide-spread suburbs of the city are unsurpassed for natural beauty. Twenty-five miles distant is *Stellenbosch*, the seat of a new Dutch University.

Port Elizabeth, on the western shore of *Algoa Bay*, is the principal seaport of the eastern section of the province and has a fine harbor. It is the outlet of the chief agricultural districts of the south-east, and from it runs the shortest and most direct route to the Transvaal gold fields. *Kimberley*, about 650 miles north-east of Cape Town, is built on the bare veld about half-way between the Vaal and the *Modder* Rivers. It derives its chief interest from the diamond mines which all lie within a short distance of the town. It is connected by rail with Bloemfontein. *East London*, on the south-east coast, has a good harbor, which, however, has to be kept open by dredging. It is the centre of an extensive trading district. Other comparatively large places are *Grahamstown*, an important commercial centre inland about a hundred miles from Port Elizabeth, and *Uitenhage*, a railway town not far from the coast.

A Street in Durban

The Province of Natal.—Natal has an area about one-tenth as great as that of British Columbia. *Zululand*, inhabited by the fierce Zulus, lies in the north-eastern corner of the province. Only about one-tenth of the population is of European descent. The European element, however, is growing rapidly. Natal lies in the extreme south-east of the Union and has a coast-line of about 375 miles. Its greatest length is about 250 miles, with an extreme breadth of 200 miles.

Natal is mountainous and very picturesque, rising in terraces from the sea. It is well watered by many small rivers, which, however, are of little use for navigation. The variety of its climate accounts for the great number of its products, which is out of all proportion to the size of the province. In the coastal belt, which is almost tropical in its climate, are grown tea, sugar-cane, tobacco, oranges, bananas, pineapples, and a small amount of coffee and some cotton. Above the tropical coastal belt there is another belt where wheat, oats, barley, and the fruits of the Temperate Zone are raised. On the plateau sheep-raising is the principal industry, but potatoes and grain are cultivated. Corn, the chief grain crop, is grown in all parts of the province. Manufacturing is becoming of increasing importance, and some minerals, such as coal, copper, and gold, are found. On the coast the acacia is grown for its bark. Whaling from the coast-ports is carried on with increasing success.

The capital is *Pietermaritzburg*, north of the *Umsinduzi River* about forty-five miles from the coast. It is surrounded by wooded hills. The city has large manufacturing interests including brewing, tanning, and the making of agricultural implements, and is also a railway centre. *Durban*, the largest city in the province and its chief seaport, is situated on the coast about three miles from its harbor, which is known as *Port Natal*. The harbor is a shallow, landlocked bay, but by dredging, it has been made available for large vessels. The city has beautiful public buildings, railway shops, and large manufacturing plants. *Ladysmith*, about 200 miles north-west of Durban, is the chief trading centre of Northern Natal, and is an important railway junction, with large railway shops.

The Province of the Orange Free State.—The Orange Free State has an area about the same as that of England, with a length of about 350 miles and an extreme breadth of about 300 miles. It lies entirely inland between the Vaal River on the north and the Orange River on the south. One-third of the population is of European descent.

The gently undulating surface of the plateau of the Orange Free State is used chiefly as pasture-land for cattle, sheep, and goats, with a consequent large trade in wool, hair, and hides and skins. The eastern portion of the province is comparatively well watered, but the western part is dry, and without irrigation is not adapted for agriculture. The land in the west, however, is suited to the raising of sheep. Wheat and corn are the principal crops, but barley and oats are also grown, together with the hardier fruits. Ostrich-farming is of great importance. Diamonds are mined extensively in various parts of the province, and there are several large and valuable coal mines.

The capital, *Bloemfontein*, lies on the open veld, surrounded by a few low hills, 750 miles from Cape Town and almost in the centre of the province. It is an important commercial and railway centre, with considerable manufacturing. The public and educational buildings are numerous and well constructed. *Harrismith*, in the south, is a railway and trading centre, while *Jaegersfontein* lies near a rich diamond field.

The Province of the Transvaal.—The Transvaal, with an extreme length of about 570 miles and an extreme breadth of about 400 miles, lies wholly inland and has an area almost one-half as great as that of Alberta. About one-quarter of the people are of European descent. The native population is composed mainly of Kaffirs.

Agriculture has been very little developed in the Transvaal, owing to the severe and frosty winter and the uncertainty of the rainfall. The grassy, treeless plains of the *High Veld* in the south-eastern part of the province are more suited to the rearing of sheep and cattle than to agriculture, as the elevation makes the climate somewhat extreme though very healthy. The plateau slopes down in terraces to the *Middle Veld*, which is well watered and covered with comparatively large trees. The more moderate climate there is favorable for raising the hardier fruits, wheat, oats, and vegetables. To the north and north-west the *Low Veld* lies within the tropics, and there sugar, coffee, tea, rice, and cotton are grown. The development of this district has been hindered by the prevalence of malaria and the general unhealthiness of the climate for Europeans.

The mineral wealth of the Transvaal is very great. In addition to the famous gold fields of the Rand, the output of which exceeds that of any other country, there are large mining areas which yield coal, copper, tin, lead, and platinum. Ostrich-farming is carried on very successfully.

Pretoria, on the northern slopes of the High Veld on both sides of the *Aapies River*, is the administrative centre of the Union and the capital of the province. It is nearly 4,500 feet above the sea. The city is beautifully laid out, has handsome public buildings, and is the headquarters of the University of South Africa. A railway connects it with Delagoa Bay on the east coast. *Johannesburg*, the most populous city in the Union, is built on the southern slope of a mountain, almost 7,000 feet above the level of the sea. To the south, east, and west of the city lie the gold fields of the Rand. There are many striking public buildings including the Transvaal University College. Johannesburg is connected by rail with Pretoria and

Photo from Ewing Galloway N.Y.

A Street in Johannesburg

Johannesburg is a very modern city.

Kimberley. *Krugersdorp* and *Germiston* are mining towns quite close to Johannesburg.

MANDATED TERRITORY

South-West Africa.—The colony lies along the Atlantic coast for about 800 miles between Angola on the north and the province of the Cape of Good Hope on the south. It is administered by the Union of South Africa under mandate from the League of Nations. There are about 20,000 Europeans in the territory, of whom 8,000 are Germans. The capital is *Windhuk* in the interior.

The surface is largely barren and without water, especially in the south and east. There is a flat strip along the coast about thirty miles wide, which gradually climbs to a mountain range, with peaks 9,000 feet in height. The interior is also mountainous. In the eastern section is the *Kalahari Desert* and in the north the *Omahika Desert.* In the northern valleys tropical vegetation flourishes. Except in the north, the climate is temperate.

The chief industry of South-West Africa is the raising of cattle, sheep, and goats, as the absence of water is a great bar to the growing of both grain and vegetables. The staple product is diamonds; the mines near *Luderitz Pequena* have been specially productive. Some copper is also mined. The principal exports are diamonds, copper, ostrich feathers, ivory, and guano. The imports are in the main textiles and food-stuffs. The bulk of the exports are sent to the Union of South Africa, Great Britain, and Belgium in the order named. Most of the imports are landed at *Walvis Bay* on the Atlantic coast.

Helps.—On the map trace definitely the boundaries of the Union of South Africa. Compare it in size with Canada; Australia; New Zealand; the British Isles. How far is Cape Town from London by the shortest sea-route? from Bombay? from Vancouver? from Montreal? from Halifax? On the map trace the coast-line. Why are there so few good harbors? Describe the great natural divisions of the country. Compare them as to climate and products. What effect has the high elevation of the greater part of the country on the climate and the vegetation? If the Drakensberg Mountains were removed to the other side of the continent, what would be the effect? Of what use are the rivers of the Union? Why is there no great port at the mouth of the Orange River? What is the importance of irrigation? What difficulties are in the way of an adequate system of irrigation? What are the chief industries? Compare sheep-farming in the Union and in England. Why are not more horses raised? Why are there so many goats? To what uses is mohair put? What animals are used as beasts of burden? Describe the ostrich industry. What are the principal grain crops? Why is so much corn raised?

On the map locate the chief mining districts. What is the importance of mining? If the gold and diamond mines should fail, what would be the effect? To what extent is manufacturing carried on? What are the chief exports and imports? What can Canada send to South Africa? What are the difficulties connected with railway building? Of what value is the warm coastal plain? Compare the products of the coastal plain with those of the plateau. Locate the principal towns and account for their position. What is the importance of each? Compare the native population of the Union with that of Canada. Of what benefit to the Union is South-West Africa?

NATIVE STATES

Bechuanaland.–The Protectorate of Bechuanaland lies entirely inland. The country is part of an elevated plateau from four to five thousand feet above sea-level. In the north there are extensive forests, while in the western section lies a part of the Kalahari Desert. The climate, although the country lies so near the tropics, is very healthful. Severe frosts occur in winter, and in summer the rainfall is heavy. On the whole, the protectorate is more suited to cattle-raising than to grain-growing. Sheep, goats, and cattle are raised, and in some districts corn is a valuable crop. There is very little trade, except with the neighboring provinces. Wild game is very plentiful. The population is almost entirely native.

Basutoland.—The colony is surrounded on all sides by the Union of South Africa. The population consists of about half a million Basutos, with about 1,600 Europeans, mainly officials, missionaries, and traders. The land is entirely in the possession of the natives, and every Basuto is engaged in farming. White settlement is not allowed, except by special permission. The authority of the chiefs is maintained by the Imperial government, and native laws and customs are interfered with as little as possible. In the course of the year about 80,000 of the natives leave their kraals to find employment in the Union. The capital is *Maseru* on the left bank of the Caledon River.

The surface is exceedingly mountainous, with fertile valleys everywhere. The scenery is magnificent and has earned for Basutoland the name of "the Switzerland of South Africa". There are no navigable waterways, the rivers being very low in the winter season and usually flooded during the summer. The winters are dry and cold, while the heat of summer is tempered by cool breezes. On account of the large area of fertile land and the favorable climate, Basutoland is one of the greatest grain-growing countries of South Africa. Wheat, millet, and mealies are the principal crops. On the mountain-slopes are raised sheep, cattle, goats, and herds of tough, wiry ponies. The rich mineral resources are untouched, because the natives object to the mines being worked. The country exports wool, goats' hair, ponies, wheat, and corn. The imports are such products as are used by the natives in their daily life—clothing, blankets, ploughs, iron and tinware, and groceries. There are but sixteen miles of railway in the whole country, but the roads are excellent.

Swaziland.—Swaziland is an inland colony at the south-eastern corner of the Transvaal. As in Basutoland, the native chiefs still continue to exercise their old-time authority in accordance with native laws and customs. The population is practically all native, there being only about 2,200 Europeans in the country.

The country is mountainous and may be divided into three parallel belts. The highest of these is about 4,500 feet above sea-level, the land sloping gradually towards the east, where the lowest belt is reached. There are numerous rivers, most of them flowing into Delagoa Bay. The climate in the main is warm and healthful. Agriculture is the chief occupation of the natives. Corn is the principal crop, but tobacco and a little cotton are also grown. Sheep, goats, and cattle are raised in large numbers. In addition, during each winter about 350,000 head of cattle are driven in from the Transvaal for grazing purposes. There is some gold and tin, but anthracite coal is the most valuable mineral. Trade is mainly with the Union of South Africa, the imports being cottons, hardware, and groceries. The chief town is *Mbabane*. Communication is maintained largely by carts, donkey-packs, and native carriers.

Helps.—On the map trace the boundaries of Bechuanaland, Basutoland, and Swaziland. Describe the surface and climate of each. What are the chief products of each? Why is Swaziland made use of during winter as a pasture for the cattle of the Transvaal? Of what use are these three districts to Great Britain? Why does she maintain her hold over them? Why does she not compel the Basutos to allow the mines to be worked? What are the advantages of having protectorates and colonies in which the natives themselves are practically in control? Compare the natives of Basutoland and Swaziland with the Kaffirs of the Union.

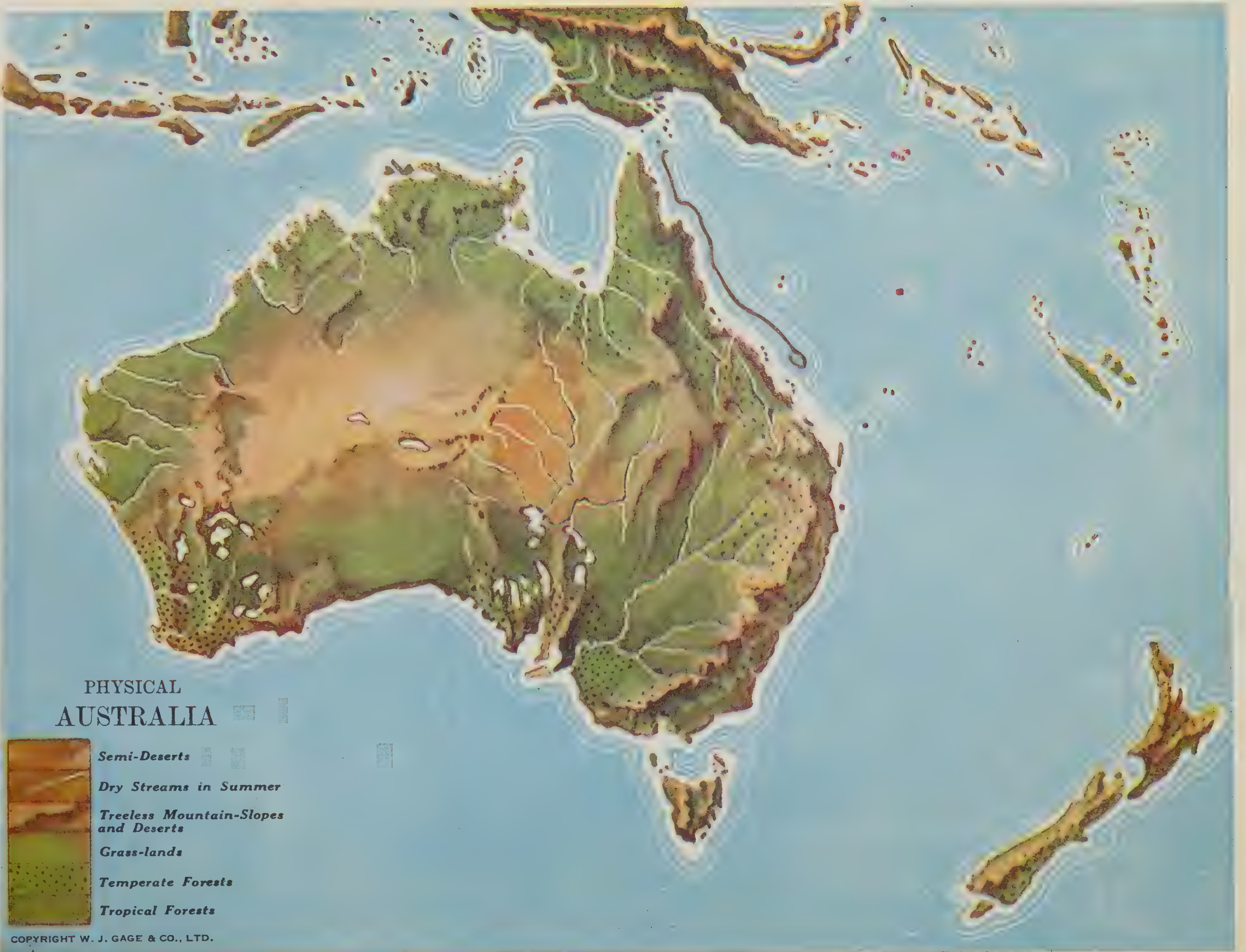
THE ATLANTIC ISLANDS

St. Helena.—The island of St. Helena, celebrated as the place of imprisonment of Napoleon after the battle of Waterloo, lies about 1,200 miles from the African coast. It is a small island, ten miles long and eight miles wide, with a rough and irregular surface and a rocky and steep coast. The climate is temperate and healthful. About a third of the surface is under cultivation, potatoes being the chief crop. The island is now used as a naval coaling-station.

Ascension.—The island of Ascension, which lies about 700 miles north-west of St. Helena, is used as a depot for naval stores and as a sanatorium for sick and disabled sailors. Only ten acres of the entire island, which is twenty-two miles in circumference, are under cultivation.

Tristan da Cunha.—The general name Tristan da Cunha is that given to a small group of islands lying about 2,000 miles west of the Cape of Good Hope. The inhabitants are mainly shipwrecked sailors with their families. Potatoes and fruits are cultivated, and sheep find good pasturage.

Helps.—On the map locate each of the Atlantic islands. What is the importance of each to the Empire?



PHYSICAL AUSTRALIA

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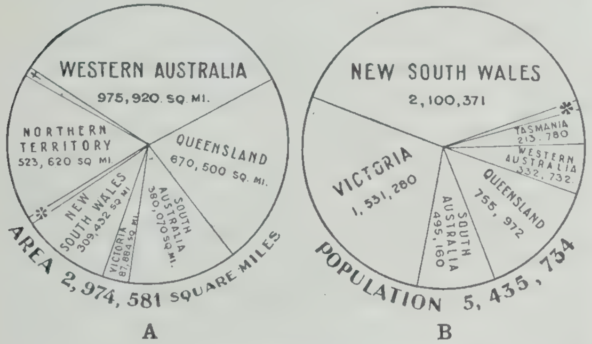
THE BRITISH EMPIRE IN AUSTRALASIA

The British Empire in Australasia includes the *Commonwealth of Australia*, together with several islands administered by the Commonwealth under mandate from the League of Nations; the Dominion of *New Zealand*, including attached islands and mandated territory; and a large number of islands lying in the South Pacific Ocean.

AUSTRALIA

Position and Extent.—The name *Australia* means "The Southern Land". It is well chosen, for Australia is the only continent which lies entirely south of the equator. It is divided almost in half by the Tropic of Capricorn. Although the smallest of the continents, it is the largest island in the world. Its area of almost 3,000,000 square miles is a little over three-quarters of that of Canada. From east to west it extends for 2,400 miles, a width as great as that of the Atlantic Ocean between Halifax and Liverpool. Its extent from north to south is less than 2,000 miles.



Area and Population of Australia

A. Area. *Federal Capital Territory, 940 sq. mi. †Tasmania, 26,215 sq. mi. **B. Population.** *Northern Territory, 3,867 and Federal Capital Territory, 2,572.

The Commonwealth.—From time to time, as British settlement in Australia progressed, various colonies sprang up in different parts of the island, until at last there were six separate governments—*New South Wales*, *Victoria*, *South Australia*, *Queensland*, *Western Australia*, and *Tasmania*. In 1901 these six colonies were formed by an Act of the Imperial Parliament into the *Commonwealth of Australia*, with a constitution much like that of Canada. The former colonies are known as states, not provinces. The capital, *Canberra* in New South Wales, was formally dedicated with imposing ceremonies in 1927 by the Duke of York, son of King George V.

A Kangaroo

People.—The original colonists of Australia and their descendants to-day, together with recent immigrants, form a white population numbering about 5,400,000. The native inhabitants are fast disappearing, although there are still some 60,000 scattered over the whole country. They are most numerous in the north. The natives are a peculiar race found nowhere else in the world. They resemble the Negro, but are brown rather than black, and their hair is not woolly. Their features, too, are not quite so heavy as those of the Negro. Their most remarkable weapon is the boomerang, a curved stick about three feet long, which they throw in such a way that it returns to the thrower,

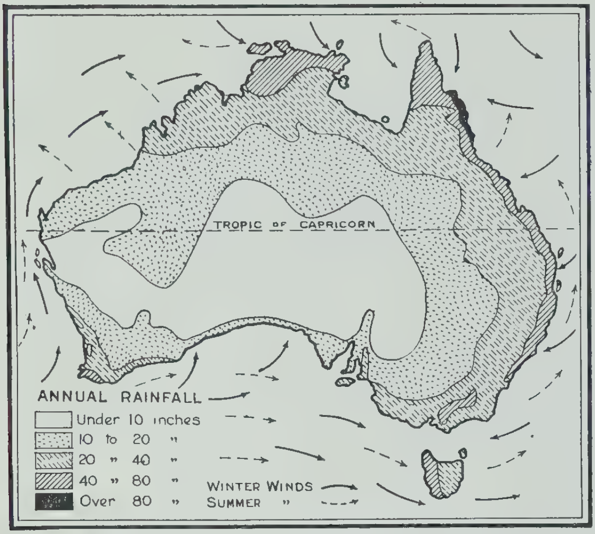
Photo by W. Saville-Kent, F.Z.S.

A Duck-billed Platypus

This curious egg-laying mammal, the only representative of its family, is mainly nocturnal in habits.

if it misses the animal at which it is aimed. The Australian natives live on anything edible they can find, from beetles to kangaroos. Some of them are cannibals.

Animals, Birds, and Reptiles.—The isolation of Australia is shown, also, by the number of animals which are found there, but nowhere else in the world. It is the land of the *marsupial*, a general term applied to any animal which carries about its young after birth in a pouch of skin upon its body. There are more than one hundred varieties of marsupials in Australia, ranging in size from animals no larger than tiny mice to the big, gray kangaroo, which measures six or seven feet from nose to tail.



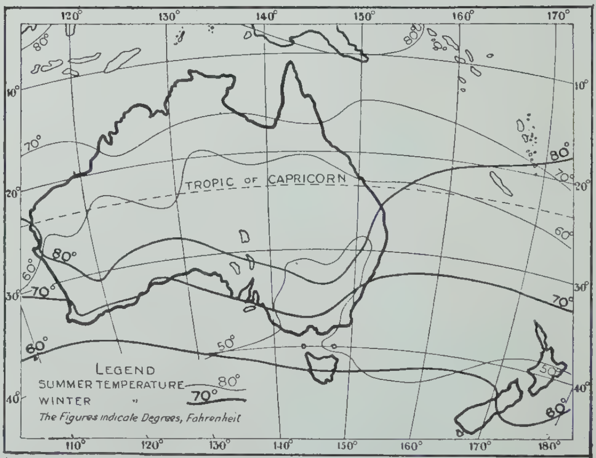
Rainfall and Wind Map of Australia

Even more curious than the marsupials are two little animals which lay eggs. One of these is the duck-billed platypus, a water animal about two feet in length. Its fur is soft and long, and makes beautiful wraps. The other is the spiny ant-eater. It has a long tongue with which it can lick up the ants on which it feeds. The most hated animal in Australia is the dingo. It is a kind of wild dog, but it never barks. The dingo does so much damage to the flocks of sheep that the government pays a bounty for its destruction. Flying-foxes are also hunted ruthlessly. Thousands of these curious animals may be seen in camps hanging head downwards from the branches of trees. They are a constant danger to the orchards, which they strip at every opportunity.

The birds of Australia are as curious as the animals. Parrots of almost every hue abound in the forests. The lyre-bird has a tail shaped like a lyre. The bower-bird builds a floor of woven twigs near its nest and erects a bower of twigs upon this platform. It brings bright feathers, bones, and shells to decorate its bower. There are also birds, the cassowary and the emu, which are much like an ostrich. Since these birds are great grass-eaters, the farmers hunt them down at every opportunity. The natives hunt the emu with dingoes trained for the purpose. Altogether, the naturalists say, there are more than 700 varieties of birds in Australia that are found nowhere else.

Reptile life abounds in Australia. Venomous snakes are common. Crocodiles live in the northern rivers, and lizards of many kinds are found almost everywhere. The enormous iguana lizard is much relished by the natives as a food.

Forests and Plants.—The forests of Australia are also noteworthy. Many trees, such as the beech and the oak, are familiar to us, but others would appear very strange. The most common family of trees in Australia is the gum-tree family, or eucalyptus trees, of which there are many varieties. Each year these trees shed their bark instead of their leaves. The shreds of dead bark hanging from the trunk give a dismal and gloomy appearance to the



Temperature Map of Australia

forests. Their leaves, too, instead of lying flat, like the leaves of our trees, are hung edgewise, so that these trees give little shade. In the valleys between the mountains tree-ferns are abundant.

The grass-lands of Australia are extensive and valuable. They produce many kinds of grasses suitable for pasturage. The most remarkable fodder plant of Australia is salt-bush, a low-spreading plant which flourishes in very dry soil. The shepherd regards salt-bush as his one salvation, when a drought has parched the ground and withered the grass.

Northern Australia.—The whole of the northern coast lies fairly within the tropics. It receives an abundant rainfall, especially during the summer, which is at its height from November to January. During these months a monsoon blows over the Indian Ocean to Northern Australia and brings with it heavy rains. The land, heated to a very high temperature by the tropical sun, causes an area of low pressure towards which the ocean winds from the north-west are drawn.

Because of the heavy rainfall and tropical climate, the vegetation of the northern coastal region is very luxuriant. There are dense forests of stately timber trees, among which we may note valuable cedars and many varieties of gum trees, some of which tower to a height of 400 feet or more. The shores of the *Gulf of Carpentaria*, which are low and swampy, are fringed with dense thickets and mangroves. Here and there are impenetrable thickets of interlacing vines. The whole region is covered with flowering plants of many varieties. It is particularly noted for its profusion of lovely orchids.

Western Australia.—The west coast of Australia is not so well watered as the north, as it lies too far south to feel the effect of the monsoons. The southern corner, however, lies in the path of the westerlies during the winter, and therefore receives a fair amount of rain during that season. It has great forests of valuable trees, including the jarrah, one of the gum family. In that region there are also many fine farms.

Southern Australia.—The *Great Australian Bight* extends for 1,100 miles along the southern coast. The shore of the Bight is one of the dreariest places in the whole world. It is fringed with rocky cliffs, some 400 feet high, unbroken for 700 miles by even a tiny rill of water. There is seldom any rain, for the west wind sweeps along the coast instead of over it, and, in any case, the cliffs are too low to cool the wind sufficiently to cause condensation.

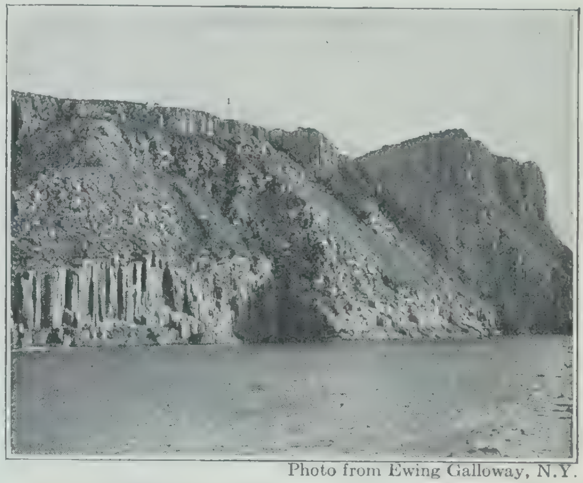


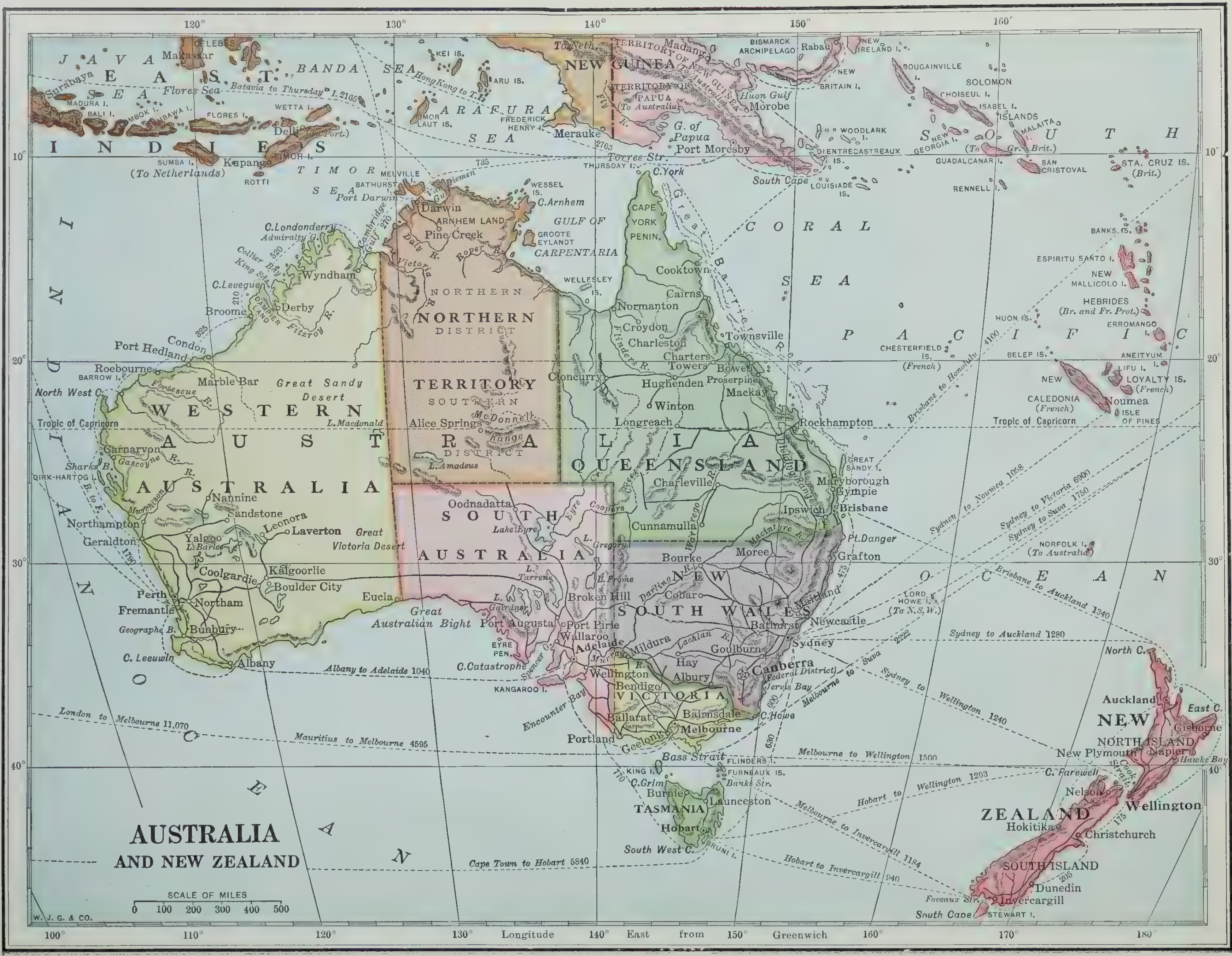
Photo from Ewing Galloway, N.Y.

Cliffs along the Coast of Tasmania

The south coast from the Bight to the south-eastern corner of the country is much more favored. Along the shore lies a narrow plain of fertile soil, backed by fairly high mountain ranges. This section, in South Australia and Victoria, forms a splendid area of agricultural land.

The island of *Tasmania*, separated from the mainland by *Bass Strait*, is mountainous. Exposed as it is to the ocean winds, it has an abundant rainfall and a cool, equable climate. Farming and fruit-growing are the main occupations of its people.

Eastern Australia.—The east coast of Australia, for the greater part of its length, lies in the path of the south-east trade-winds. A range of mountains, called the *Dividing Range*, parallels the coast. Between the Dividing Range and the ocean lies a rich plain, seldom more than fifty miles wide, and frequently much less. The mountains cool the trade-winds sufficiently to cause a heavy rainfall over their eastern slopes and on the


AUSTRALIA
AND NEW ZEALAND
SCALE OF MILES
0 100 200 300 400 500
W. J. G. & CO.
Longitude East from Greenwich
100°
110°
120°
130°
140°
150°
160°
170°
180°
10°
20°
30°
40°
JAVA SEA
EAST INDIES
BANDA SEA
ARAFURA SEA
TIMOR SEA
INDIAN OCEAN
CORAL SEA
SOUTH PACIFIC OCEAN
Surabaya
MADURA I.
BALI I.
LOMBOK I.
SUMBAWA I.
FLORES I.
Flores Sea
CELEBES
Makassar
Batavia to Thursday I. 2165
WETTA I.
Dell (To Port.)
TIMOR I.
Kapang
ROTTI
SUMBA I.
(To Netherlands)
KEI IS.
ARU IS.
Hong Kong to T.I.
TIMOR LAUT IS.
FREDERICK HENRY I.
Merauke
To Neth.
NEW GUINEA
TERRITORY OF NEW GUINEA (To Australia)
TERRITORY OF PAPUA (To Australia)
Fly R.
Madang
Huon Gulf
Morobe
G. of Papua
Port Moresby
South Cape
BISMARCK ARCHIPELAGO
Rabaul
NEW IRELAND I.
NEW BRITAIN I.
BOUGAINVILLE I.
SOLOMON ISLANDS
CHOISEUL I.
ISABEL I.
MALAITA I.
NEW GEORGIA I.
GUADALCANAR I.
SAN CRISTOVAL
(To Gr. Brit.)
RENNELL I.
WOODLARK I.
D'ENTRECASTEAUX IS.
LOUISIADE IS.
STA. CRUZ IS. (Brit.)
BANKS IS.
ESPIRITU SANTO I.
NEW MALLICOLO I.
HEBRIDES (Br. and Fr. Prot.)
ERROMANGO
ANEITYUM
HUON IS.
BELEP IS.
CHESTERFIELD IS. (French)
NEW CALEDONIA (French)
Noumea
ISLE OF PINES
LIFU I.
LOYALTY IS. (French)
NORFOLK I. (To Australia)
LORD HOWE I. (To N.S.W.)
Torres Str.
THURSDAY I.
2765
735
C. York
CAPE YORK PENIN.
Great Barrier Reef
MELVILLE I.
BATHURST I.
Van Diemen G.
Port Darwin
Darwin
ARNHEM LAND
Pine Creek
Daly R.
Roper R.
Victoria R.
WESSEL IS.
C. Arnhem
GULF OF CARPENTARIA
GROOTE EYLANDT
WELLESLEY IS.
Cambridge Gulf 270
C. Londonderry
Admiralty G.
Collier Bay
King Sd.
520
C. Leveque
210
DAMPIER LAND
Derby
Fitzroy R.
Wyndham
Broome
325
Condon
Port Hedland
Roebourne
BARROW I.
North West C.
Marble Bar
Fortescue R.
Tropic of Capricorn
Carnarvon
Gascoyne R.
Sharks B.
DIRK-HARTOG I.
B. to F.
Murchison R.
Northampton
Geraldton
1790
Perth
Fremantle
Geographe B.
Bunbury
C. Leeuwin
Albany
Northam
Yalgoo
L. Barlee
Coolgardie
Kalgoorlie
Boulder City
Nannine
Sandstone
Leonora
Laverton
WESTERN AUSTRALIA
Great Sandy Desert
L. Macdonald
Great Victoria Desert
Eucla
NORTHERN TERRITORY
NORTHERN DISTRICT
SOUTHERN DISTRICT
Alice Springs
McDonnell Range
L. Amadeus
SOUTH AUSTRALIA
Oodnadatta
Lake Eyre
Eyre Cr.
Coopers Cr.
L. Gregory
L. Frome
L. Torrens
L. Gairdner
Great Australian Bight
Port Augusta
Port Pirie
Wallaroo
Adelaide
EYRE PEN.
C. Catastrophe
Spencer G.
KANGAROO I.
Encounter Bay
Murray R.
QUEENSLAND
Cooktown
Cairns
Normanton
Croydon
Charleston
Charters Towers
Townsville
Bowen
Proserpine
Mackay
Flinders R.
Cloncurry
Hughenden
Winton
Longreach
Rockhampton
GREAT SANDY I.
Maryborough
Gympie
Brisbane
Ipswich
Charleville
Cunnamulla
Warrego R.
Dividing Range
Macintyre R.
Pt. Danger
Grafton
475
NEW SOUTH WALES
Bourke
Moree
Darling R.
Cobar
Broken Hill
Maitland
Newcastle
Bathurst
Sydney
Lachlan R.
Goulburn
Canberra (Federal District)
Jervis Bay
Mildura
Hay
Albury
Wellington
VICTORIA
Bendigo
Ballarat
Bairnsdale
Melbourne
Geelong
Portland
C. Howe
Bass Strait
KING I.
C. Grim
FLINDERS I.
FURNEAUX IS.
Banks Str.
TASMANIA
Burnie
Launceston
Hobart
BRUNI I.
South West C.
770
630
900
Albany to Adelaide 1040
London to Melbourne 11,070
Mauritius to Melbourne 4595
Cape Town to Hobart 5840
Melbourne to Wellington 1500
Hobart to Wellington 1293
Melbourne to Invercargill 1184
Hobart to Invercargill 940
Melbourne to Suva
Sydney to Wellington 1240
Sydney to Auckland 1280
Brisbane to Auckland 1340
Sydney to Noumea 1058
Sydney to Victoria 6900
Sydney to Suva 1750
Brisbane to Honolulu 4100
2222
NEW ZEALAND
North C.
Auckland
East C.
Gisborne
NORTH ISLAND
New Plymouth
Napier
Hawke Bay
C. Farewell
Cook Strait
Nelson
Wellington
175
Hokitika
Christchurch
SOUTH ISLAND
205
Dunedin
Invercargill
Foveaux Str.
South Cape
STEWART I.

coastal plain. They are not high enough, however, to condense all the moisture out of the winds, so that there is a slight rainfall upon their western slopes as well. Consequently, the eastern slopes and the coastal plain are well timbered. After the land is cleared, splendid farm crops can be raised. Sugar-cane and maize grow well in the tropical section of the coast, as do tropical fruits such as bananas, pineapples, oranges, lemons, persimmons, and many others. Spices, such as pepper, nutmeg, and ginger, can be raised easily. Farther south, wheat is grown on a large scale.

Photo from Ewing Galloway, N.Y.

An Artesian Well in the dry Country

The most curious feature of the east coast is the *Great Barrier Reef*. This is a stupendous coral reef, which parallels the coast for a distance of 1,200 miles, making a channel of calm water thirty to seventy miles wide between it and the shore. In places the reef is 100 miles wide, but there are passages at intervals, especially opposite the mouths of the rivers which flow into the ocean on the east. The ocean rollers break in thundering surf along the outer edge. The inner edge is like a vast coral garden. Some of the corals grow in smooth, round masses, others in delicate leaf-like forms; some form long, branching stems; others a lacy network like fretted ivory. The diversity of color is even greater than that of form: vivid greens, rich purples, quiet browns, bright yellows, delicate pinks, flaming reds, blend and contrast in gorgeous profusion. Fish of many brilliant hues dart like living jewels through the blue water.

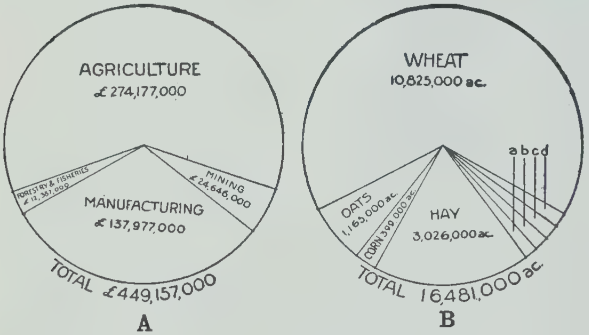
The Interior.—The great interior of the country is shaped much like a shallow plate, the coastal plains and highland forming the edge. The edge of the plate is comparatively narrow all the way around. The high ground bordering the western coast falls slowly away in broad arid plains towards the centre of the continent. This vast area is mainly desert. The trade-winds coming from the east lose their moisture in passing over the eastern uplands. When they reach Central and Western Australia they are hot, dry winds, which parch the ground as they sweep over it. This section of Australia is almost rainless.

The eastern uplands slope more steeply towards the centre of the country than towards the ocean. As their western slopes receive a little rain from the trade-winds, they are fairly well timbered on their upper levels along the courses of the rivers. After the timbered areas come wide rolling downs, producing splendid grass. These are the great grazing lands of Australia, upon which millions of sheep find pasturage. The downs pass gradually into arid desert land, in which only the sparsest vegetation is found.

Camels employed in Transport near Lake Eyre

The Great Australian Desert is one of the largest in the world. The greater part of it is covered with gray sand, in some places level, in others drifted into dunes and ridges. Much of it is dotted with torn bushes; some areas are covered with stunted trees, others are absolutely bare of all vegetation. The sun beating down upon the naked earth makes this one of the hottest places in the world. Captain Sturt, one of the first explorers to traverse the desert, reported an average temperature for January of 104° in the shade. The sand at noon-day was so hot that if a match happened to fall on the ground it took fire instantly. Writing became a matter of some difficulty, owing to the rapidity with which the ink dried on the pen.

Drainage.—The slight rains which fall on the interior slopes of the highland form a number of creeks and rivers, which, following the slope of the land, flow towards the centre of the country. Most of them disappear in the thirsty sand long before they reach the centre of the depression. In the rainy season, some of the larger ones pour their flood-waters into extensive shallow depressions in the central regions. These form the lake region of Australia. The flood-waters evaporate with astonishing rapidity, leaving behind them a deposit of salt. The largest are *Lakes Eyre*, *Gairdner*, and *Torrens*, which are all salt. For the greater part of the year these so-called lakes are merely large areas of brackish mud, covered with a treacherous saline crust.



Value of Products and the Chief Crops of Australia

A. Value of Products. B. Acreage under Chief Crops. (*a*) Barley, 260,000 acres. (*b*) Sugar cane, 274,000 acres. (*c*) Orchards and fruit gardens, 277,000 acres. (*d*) Potatoes, 139,000 acres; Sugar beets, 2,000 acres; Vineyards, 114,000 acres.

Besides the rivers which drain inland, there are numerous streams rising on the eastern side of the ridge and running through the coastal plain to the ocean. These are, without exception, short rivers of comparatively little value for navigation.

The *Murray*, with its long tributaries, the *Darling* and the *Murrumbidgee*, forms the only great river system of Australia. These streams all rise upon the western slopes of the Dividing Range, and, after flowing in a general south-west direction, empty into the Southern Ocean. The wide plain lying between the Murray and the Murrumbidgee is known as the *Riverina*. This section is noted for sheep-rearing and for wheat. The headwaters of the Darling drain an area called the *Darling Downs*, a beautiful volcanic plateau situated about one hundred miles from the eastern coast. The Downs contain about 4,000,000 acres of extremely rich soil, one of the finest agricultural sections of Australia. Adjoining the Downs on the south lies a very similar fertile plateau, known as the *Liverpool Plains*.

The south-eastern corner of the country is the only large section of the temperate part of Australia which is reasonably well watered. Consequently, it is the most prosperous and populous part of the whole continent. There, great sheep farms, or stations as the Australians call them, are numerous. There, too, are large wheat farms, splendid dairy farms, extensive vineyards, and magnificent orchards. In that region are found the greatest cities of Australia.

Agriculture.—Sheep-raising is the leading industry of Australia. In 1789 there were twenty-nine sheep in the country; to-day Australia disputes with the Argentine the proud position of the greatest sheep country in the world. The vast plains of New South Wales, Queensland, Victoria, and the south-west section of Western Australia afford pasturage to 93,000,000 sheep; from these in 1926 the clip of wool was over 700,000,000 pounds.

Some of the sheep stations are enormous in extent. In New South Wales there are nearly 200 stations of more than 100,000 acres each. In Queensland there are stations that pasture over 140,000 sheep, while the whole Commonwealth has eighteen estates which carry over 100,000 head each. It is said that one of the large stations is fenced with wire, which, if the strands were extended in a straight line, would reach from Halifax to Vancouver. But the squatters, as the sheep ranchers are called in Australia, are finding that these large stations are not so profitable as a smaller area. At present the greater number of the stations are from five to ten thousand acres, and are managed like an ordinary farm. They are fenced off into paddocks of about 800 acres each, so that a comparatively small number of men is required to look after the sheep. The shearing is done by machinery, the shearers travelling from one station to another, just as our threshing gangs do.

Merino Sheep

Each clip yields about nine pounds of wool.

Wool, however, is not the only product of the stations. From eight to twelve millions of sheep and lambs are slaughtered each year, and their carcasses frozen and sent in special refrigerator ships to the British and foreign markets. Australian mutton is even shipped to Canada, where it arrives in excellent condition.

The worst enemy of the Australian sheep-farmer is drought. In a dry season millions of sheep may die of thirst. However, the sinking of artesian wells is helping the squatters to overcome this danger. Further, it is enabling them to extend the grazing area into districts formerly thought to be useless for sheep-raising.

Another serious menace to the squatter is the rabbits. There are tens of millions of these pests in Australia, and the utmost efforts of the government have not succeeded in exterminating them. Seven rabbits will eat as much grass as one sheep, and a single pair of rabbits in five years will increase to at least ten million pairs. Wire netting, poison wells, and the payment of bounties have all been tried, but so far in vain. However, the rabbits are of some benefit. Over 20,000,000 frozen rabbits are shipped each year to Europe, and a flourishing industry has sprung up in rabbit skins. The skins are shipped to Great Britain and the United States, where they are used in the making of felt hats and for fur linings.

Almost half the cattle raised in the Commonwealth are in Queensland, where the pasture is admirably suited to the raising of beef cattle. The beef is frozen and shipped to other countries, but only after a great deal of it has been prepared in the packing-houses at home. In Victoria and New South Wales cattle are raised for dairy purposes. Butter, cheese, and condensed milk are important articles of export. Hogs are raised in large numbers, and bacon and ham are manufactured and exported.

Photo from Ewing Galloway, N.Y.

Hauling Wool to Market

About sixty per cent of the ploughed land in Australia is given over to the production of wheat, which can be raised with profit in almost any part of the country. Dry farming and the use of irrigation are now making it possible to raise wheat in some sections which up to the present have been useless for the purpose. The Australians have no elevator system such as we have in Canada. The wheat, after it is threshed, is bagged and carried to market in wagons or on flat cars. It is safe from rain, but a great deal is destroyed by rats. However, elevators are now being built, so it is probable that the present method of transportation will soon be abandoned. Hay, green fodder, oats, and corn yield abundant crops. As in South Africa, the hay is usually cut green and left to ripen.

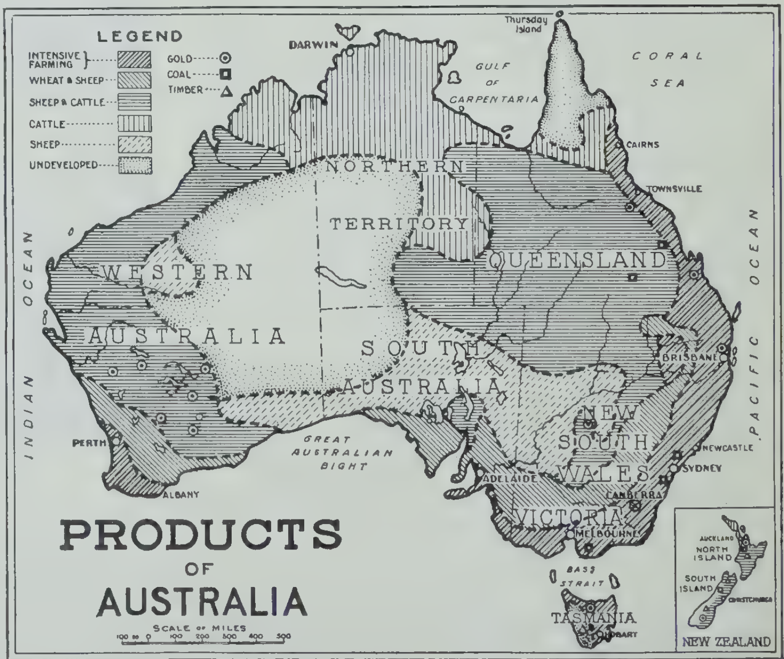
Photo from Ewing Galloway, N.Y.

Wheat in Bags at a Railway Siding

Compare with our elevator system.

In Queensland and New South Wales enough sugar-cane is grown to provide for domestic use, including jam-making, and this cane-sugar is supplemented by beet-sugar, the quantity of which is increasing each year. Cotton-growing on irrigated lands in Queensland is proving a profitable venture. The trouble with the growing of both cotton and sugar is that none but white labor may be employed in their production; in other countries the work on the plantations is done by Negroes or East Indians. In South Australia and Victoria grapes, from which wine is produced, yield a large crop. The raisin and currant industry is now progressing rapidly, mainly on small holdings. Apples are a considerable crop in Tasmania, and in the tropical regions bananas, pineapples, oranges, lemons, figs, olives, and almonds grow abundantly.

Mining.—The mineral wealth of Australia is one of the most striking features of the Commonwealth. Large gold-bearing areas are found in every part of the country, with the single exception of South Australia. The soil of almost one-half of Victoria contains more or less gold. *Ballarat* is the most important mining town of Victoria. There, in the early days, several nuggets of pure gold weighing over one hundred pounds each, were found. The whole of the Dividing Range contains gold. One of the richest gold mines in the world is at *Mount Morgan* in Queensland. In Western Australia the best mines are in the desert area towards the south.



Queensland, besides possessing some 2000 gold mines, has also rich deposits of tin and copper. Silver is found in New South Wales, which also possesses a vast coal field lying along the coast to the north of *Sydney*. Most of the ships which ply over the South Pacific are supplied with coal from these mines. The mountains of Tasmania contain gold, silver, tin, coal, and copper in considerable quantities. The output of zinc from the *Broken Hill* mining district in New South Wales is enormous and is increasing as the mines are being developed. Iron is very widely distributed, with the result that a large iron and steel industry is now firmly established. What little oil has as yet been located in Australia is found in Tasmania.

Forest Wealth.—Everywhere in Australia is found the eucalyptus tree, of which there are some 150 species. It provides a very durable timber, while its bark, resin, and oil are valuable commercial products. The jarrah, is a remarkably hard wood, and is used for paving blocks, for piles and railway ties, and in the construction of piers and wharves. The bark of the acacia, or wattles, of which there are about 300 varieties, is valuable for tanning purposes. Other hard woods are the iron bark, tallow wood, ebony, and mahogany. The timber from all these trees is much used in furniture-making. European trees, such as the ash, beech, chestnut, and oak, are common. Australia, however, does not produce nearly enough timber for local needs. Soft woods are imported from Norway and Sweden, and a considerable quantity of lumber is brought from Canada.

Driving Stock across a Stream

Fishing.—The coast waters of Australia abound in valuable food fish, but as yet no extensive fishing industry has developed. The gathering of pearl oysters and pearl shell, however, employs many men and vessels, particularly off the coasts of Queensland and Western Australia. The Great Barrier Reef is one of the greatest pearling grounds in the world. The pearl oyster breeds very rapidly, so that the supply would appear to be almost inexhaustible. Trepang, or sea-cucumber, a delicacy much sought after by the Chinese, who use it in soups, is caught chiefly on the Great Barrier Reef. The tropical waters also yield a considerable quantity of tortoise-shell.

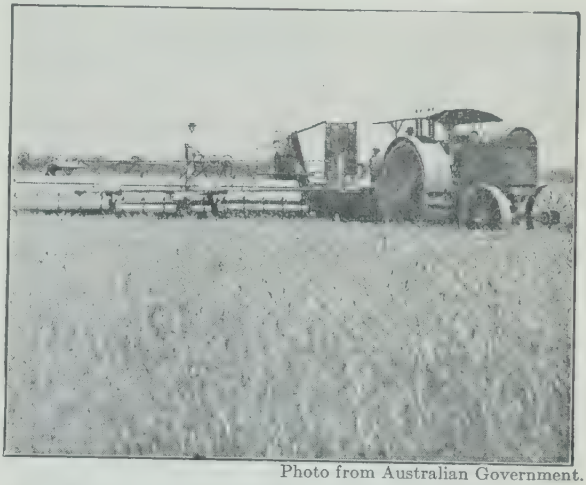


Photo from Australian Government.

Cutting and threshing Wheat, Australia

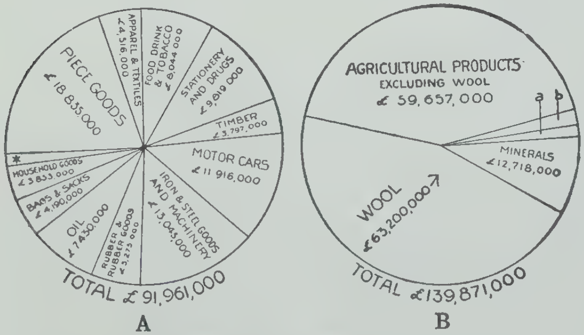
This combination reaper and thresher cuts a swath of 27 feet.

Manufactures.—The manufactures of Australia are closely related to the basic industries of the country. The principal manufacturing establishments are butter, cheese, and condensed-milk factories, tanneries and boot and shoe factories, wool-scouring works, woollen mills, meat-packing and meat-freezing plants, soap works, sugar-mills, jam factories, and flour-mills. There are also many saw-mills in operation. Recently the Australians have begun the manufacture of iron and steel goods, heavy machinery, engines, and automobiles, with good prospects of success. Ship-building is also becoming an important industry.

Australia is not well provided with water-power. In fact, Tasmania, with its heavy rainfall, mountain lakes, and rapid streams, is the only part of the country where electrical energy can be developed to advantage from water-power. However, in most sections coal is abundant and cheap, so that the lack of water-power is not so serious as at first might appear. It is interesting to note that New South Wales, with a plentiful supply of coal, produced in 1925 almost forty per cent of all goods manufactured in the Commonwealth.

Trade and Commerce.—The exports of Australia, when compared with the comparatively small population, are enormous. Wool leads the list, followed by wheat, meats, hides and skins, butter, flour, fruits, and tallow in the order named. All the foregoing are agricultural products, but minerals, including gold, silver, lead, copper, and tin, occupy a very important place. A great deal of timber is also exported. The imports consist chiefly of manufactured goods, such as textiles, agricultural implements, automobiles, iron and steel goods, rubber goods, paper, tobacco, oil, wearing apparel, bags and sacks, drugs, tea, and coffee.

Of the total exports more than one-half are sent to Great Britain. France is the next best customer, with about one-seventh of the value of the exports sent to Great Britain. The United States, Italy, and Japan rank about equal and are followed by India, Belgium, New Zealand, and Germany.



Value of Imports and Exports of Australia

A. Imports. *Musical Instruments, £1,241,000.
B. Exports. (*a*) Concentrates, £2,028,000; (*b*) Other exports, £2,268,000.

Canada imports very little from Australia, but in 1926 she sent to the Commonwealth goods to the value of $15,000,000, almost one-third of which was automobiles. The imports of Australia are obtained chiefly from Great Britain and the United States, the former supplying about three times as much as the latter. India, Japan, Canada, the Dutch East Indies, and France provide almost the entire remainder of the imports. Most of the trade is carried in British ships, only about one-third of the vessels visiting Australia being of non-British registry. The Commonwealth has a line of steamships of its own.

Photo from Ewing Galloway, N.Y.

Irrigated Land in New South Wales

Transportation.—Australia has about 25,000 miles of railway, all but a thousand miles of which is under government ownership. It is now possible to travel continuously by rail over the Trans-Australian Railway and connecting lines from *Brisbane* on the east coast to *Perth* on the west coast, by way of Sydney, Melbourne, and *Adelaide*. Several branch lines penetrate into the interior, so that trade may be carried on between the coast cities and the inland towns. Railways are of extreme importance in Australia, as, with the exception of the

Murray-Darling system, most of the rivers are unnavigable, especially during the dry season.

The most serious difficulty in connection with the shipment of goods from one point to another is that there is no uniform distance between the rails for the various lines, the gauge varying from three feet six inches on some lines to five feet three inches on others. This makes frequent transshipment of freight necessary, thus causing both delay and expense. A scheme is now being considered for changing all the railway tracks to a uniform gauge, but it will be some time before this is done. There are about 500 miles of electric railway in the Commonwealth.

Cities and Towns.—The six most important cities in Australia are the capitals of the six states of the Commonwealth. *Sydney,* the capital of New South Wales and the largest city, has an ideal location on the south shore of Port Jackson on the east coast. It has one of the safest and most beautiful harbors in the world. The public buildings and churches are unusually handsome, while its public parks and gardens are unsurpassed in the Commonwealth. It is the seat of the state university. As the city lies in the midst of a great coal-bearing area, it has many manufactures. Its commerce is enormous. Sydney is also a coaling-station and the headquarters of the British fleet in Australian waters. The population is more than a million. A few miles south of Sydney is the great National Park, which contains about 33,000 acres, most of it virgin forest.

Melbourne, the capital of Victoria and the second city in size, lies on both sides of the *Yarra River* on the great *Bay of Port Philip* on the south coast. On the flat lands at the mouth of the river is the shipping district. The city itself is somewhat hilly, but this serves to bring into greater relief its magnificent public buildings, churches, factories, stores, and private residences. The public parks and gardens are very beautiful. Melbourne, like Sydney, is a commercial centre and a shipping port, and has many varied manufactures, mainly connected with the natural products of the country. The population is almost as large as that of Sydney.

Adelaide, the capital of South Australia, lies in the midst of a level plain on the banks of the *Torrens River* seven miles from its mouth. The belts of park-land that surround it make the city one of the most beautiful in Australia. It has a number of fine public buildings and gardens, and is the seat of the state university. Adelaide is the centre of almost the entire trade of South Australia. *Port Adelaide,* seven miles distant, has a fine natural harbor. *Brisbane,* the capital of Queensland, is situated on the *Brisbane River,* twenty-five miles from its mouth. It lies about 500 miles north of Sydney. The river channel is kept constantly dredged, so that large vessels can proceed as far as the city. Like most of the other large cities of the Commonwealth, it has fine public buildings and beautiful parks and gardens. It has a large local trade, considerable shipping, and a number of manufactures.

Photo from Ewing Galloway, N.Y.

Railway Yards, Melbourne

Perth, the capital of Western Australia, is situated on the *Swan River* about twelve miles from its mouth. Its port is *Fremantle,* which has a good harbor and is a port of call for many steamers. The city is a commercial centre, with some few manufactures. *Hobart,* the capital of Tasmania, lies in the southern part of the island, twelve miles from the mouth of the *Derwent River.*

The city has a fine natural harbor, is a shipping centre, and has many manufactures, including jams, flour, and leather.

THE STATES OF THE COMMONWEALTH

New South Wales.—New South Wales, the oldest of the Australian colonies, lies in the south-eastern part of the country to the north of Victoria. Its area is considerably larger than that of Alberta. Two-thirds of its surface is well watered and adapted for either agriculture or stock-raising. Sheep-farming is the staple industry, and the value of the annual wool clip is very great. Cattle are also raised in large numbers. Wheat is the chief grain crop. New South Wales possesses great mineral wealth. Gold, silver, lead, copper, and coal are all mined. Iron alone of the important metals is not found, and, therefore, iron and steel products bulk largely in the list of imports. Almost one-half of the inhabitants of the state live in Sydney. *Newcastle,* the second city of New South Wales, is the chief coal port of Australia.

Photo from Ewing Galloway, N.Y.

The Circular Quay, Sydney

Victoria.—Victoria, the smallest by far of the Australian states, comprises the south-eastern corner of the country and is much the most fertile section. Its area is about one-third that of Alberta. Wool and other live stock products are its chief exports, but it also produces wheat and wine. Victoria has rich gold fields, the discovery of which in 1851 gave the first great impetus to the colonization of Australia. With such advantages it is but natural that it should be the most densely populated and prosperous section of the continent. Of its population more than one-half lives in Melbourne.

South Australia.—South Australia, the central state of the Commonwealth, borders on the southern coast. It is somewhat larger than British Columbia. The best part of the state is in the south, a considerable part of the interior being desert. Its wealth is derived almost entirely from agriculture, chiefly wheat-growing and stock-raising. Gold and copper are the most important minerals.

Queensland. — Queensland occupies the whole north-eastern corner of the country. It is about one and one-half times the size of Ontario. Of this vast area rather more than half lies within the tropics. A large part of the state is still uncleared, virgin land. In the north, all tropical fruits and plants can be successfully grown. Sugar-cane is an important crop, and corn is extensively grown in the district about the tropics. In the south, uplands stretch for hundreds of miles westward from the Dividing Range. There the heat natural to the latitude is somewhat moderated by the elevation, and the vast grassy plains are therefore ideal for stock-raising. Queensland is fairly rich in minerals, especially gold and tin. About one-third of the population lives in Brisbane.

Thursday Island, in *Torres Strait* off the north coast of Queensland, is the seat of the pearl-fishing industry in the Pacific Ocean. As the island commands Torres Strait, it is an important link in the defence of the Empire. It is strongly fortified and is a naval coaling-station. The harbor is large enough and deep enough to accommodate the largest battle-ships.

Western Australia. — Western Australia comprises the whole western portion of the Commonwealth, about one-third of the entire continent. Most of this state is more or less desert, but there are many extensive forests of very valuable timber. On the coast of the south-western corner of the state is a fertile strip, near the centre of which is Perth. There is also a habitable strip upon the north-west coast, but this district is not very attractive. How small, comparatively, these areas of good land are may be seen from the fact that only one three-thousandth part of the state is under cultivation. The barren lands of Western Australia are not entirely worthless, however. Gold has been found in several places, and already busy towns, like *Kalgoorlie,* to which water is pumped from near Perth, 300 miles away, and *Coolgardie,* have sprung up in the desert. A very considerable part of the population is engaged in mining.

Tasmania.—The island of Tasmania is about 150 miles due south of the south-eastern corner of Australia. It is a mountainous island about the size of Ireland, with hills rising over 3,000 feet above the sea. Tasmania has a delightful, temperate climate, much fertile soil, and considerable mineral wealth. The growth of the state, however, has been slow, and much of the surface is still thickly wooded, since the population has not yet increased sufficiently to require the land. The eastern part, being drier, is not so densely forested as the western portion and possesses much good grass-land. Apples, pears, and other fruits of the Temperate Zone do well there. Oats is the staple grain crop. In addition to its wealth of forest, the western portion has rich deposits of copper, silver, tin, gold, and coal.

FEDERAL AND MANDATED TERRITORY

Canberra.—In 1909 New South Wales presented to the Commonwealth a territory 912 square miles in extent in the southern part of the state, about 200 miles south-west of Sydney, for the purposes of a federal district. Within this territory is located *Canberra,* the capital of the Commonwealth. A definite plan for the construction of the city was adopted, and work was begun in 1913. Canberra was formally dedicated as the capital by the Duke of York, the son of King George V, during the summer of 1927. New South Wales also donated an area of twenty-eight square miles on *Jarvis Bay* for the purposes of a federal Naval College, together with the right of way for a railway from the port to Canberra.

The Northern Territory.—When the Commonwealth was formed, South Australia extended from the south to the north coast through the heart of the country, but, in 1911, the northern part of the state was ceded to the federal government. This district, known as the Northern Territory, has an area slightly larger than that of Manitoba and Saskatchewan together. The population is small, about 23,000, as the northern part of the territory is too hot and the southern part too dry to encourage colonization. There are, however, over three-quarters of a million cattle in the territory, and a considerable amount of mining is carried on, particularly of tin, copper, and gold.

Photo from Ewing Galloway, N.Y.
Harvesting Hops in Tasmania

The Territories of Papua and New Guinea.—To the Commonwealth belongs the Territory of Papua, which consists of the south-eastern portion of *New Guinea,* together with a number of groups of small islands along the coast. The north-eastern section is administered by Australia as a mandated territory under the name of *New Guinea.* The people are a branch of the Negro race. Only a few of them are at all civilized. In the interior they still live in savagery.

Papua is essentially mountainous, a single lofty chain traversing the territory. There are, however, no active volcanoes. The rainfall is heavy, and this, combined with the high temperature, makes the low-lying coast-lands and the river valleys unhealthy for Europeans, of whom there are about 1,100 in the territory. The difference in elevation accounts for the great variety in the vegetation, from the rank growth of the tropical plants on the plains to the vegetation of the Temperate Zone in the higher levels. Papua is the home of the beautiful bird of Paradise and of the gorgeous Goura pigeon.

The chief products are copra, sisal hemp, rubber, gold, and pearls. Trade is largely with Queensland and New South Wales. There is a regular steamship service with Sydney. *Port Moresby* is the principal town.

A Bread-Fruit Tree

Norfolk Island.—The affairs of Norfolk have been administered since 1914 by the government of the Commonwealth. The island lies in the Pacific about 800 miles east of Australia. The surface is mountainous, with high cliffs guarding the coast. The soil is wonderfully fertile, oranges, lemons, grapes, figs, and pineapples growing in abundance. The Norfolk pine, which reaches a height of 200 feet, is a magnificent tree. Fruit-growing and fishing are the principal occupations of the people. Trade is chiefly with passing ships and with Australia.

Mandated Territory.—At the conclusion of the Great War the German territory in the Pacific Ocean lying south of the equator was handed over to Australia under mandate from the League of Nations. This is now known as the *Territory of New Guinea*, and includes the former *Kaiser Wilhelm's Land*, the former *Bismarck Archipelago*, and a number of the *Solomon Islands*. The former Kaiser Wilhelm's Land is the northern section of South-east New Guinea and includes a number of small islands along the coast. The coast-line is almost unbroken, so that there are few good harbors. Mountain ranges occupy the interior. The climate is very hot, with a heavy rainfall. Coconuts and rubber are the principal products, and all the tropical fruits are grown. The chief town is *Madang.*

The two principal islands of the former Bismarck Archipelago are *New Britain* and *New Ireland.* They are very mountainous, with irregular coast-lines. The soil of both islands is very fertile. The chief industry is the growing of coconuts. *The Admiralty Islands* are the most important of the smaller groups of the Archipelago. Some of the islands are volcanic in their origin and some coral. Coconut-growing is the principal occupation of the people, but there are valuable pearl fisheries along the coast.

The *Solomon Islands* are very mountainous, but there is only one active volcano. Only sufficient bananas, coconuts, and sweet potatoes are grown to provide for the needs of the inhabitants.

Helps.—On a globe locate Australia. What is its relation to the equator? How far is it from the mainland of Asia? of Africa? of America? What is the distance from its nearest coast to Calcutta? Hong Kong? Vancouver? Cape Town? How far is it from London by the shortest commercial route? Compare the area of Australia with that of Canada; South Africa; British India; the British Isles.

Compare the great natural divisions of Australia as to surface, climate, and products. Of what use is the Great Barrier Reef? Compare the coast-line on the north and the south; on the east and the west. Compare the animals and birds of Australia with those of Canada; India; South Africa. Compare the forests of Australia with those of Canada. Of what use are the forests? Compare the Murray-Darling system with the St. Lawrence; the Saskatchewan; the Orange; the Ganges. What is the chief difference in surface between Australia and Canada? Compare the natives of Australia with the Canadian Indians.

Compare in size the desert area in Australia with those parts of Canada that are unsuitable for cultivation. Why is Australia so peculiarly suited to the raising of sheep? Mark on the map the chief sheep-raising districts. What are the chief enemies of the Australian sheep-farmer? How are these being dealt with? What is the importance of irrigation? Mark on the map the chief cattle districts; the chief grain districts; the chief fruit districts; the chief mining districts. Compare Australia with Canada as a wheat-growing country. Compare a harvest scene in Australia with one in Canada. What would be the effect on Canada of a marked increase in the Australian wheat crop?

Locate on the map the chief cities. Account for the location of each. What is the importance of each? Why do so many of the people live in the towns and cities? Where are the most thickly populated sections located? What is the importance of railways? What are the chief exports? Connect these with the primary industries of the country. What does Australia chiefly import? Why in each case? Why does Australia restrict her immigration to white men? Of what value is Papua to Australia? What benefits result to Australia from the mandated territory?

NEW ZEALAND

Position and Extent.—The Dominion of New Zealand consists of a group of volcanic islands lying in the South Pacific some 1200 miles to the east of Australia. It includes *North Island*, *South Island*, and *Stewart Island*. The group is 1000 miles long and 180 miles across at the widest part, with a coast-line of 3,000 miles. New Zealand, as may be seen from the map, is shaped much like a boot, with the toe facing towards the north-east. The long, narrow toe is *Auckland Peninsula*, the heel is *East Cape*, and the rest of North Island and the whole of South Island form the leg of the boot. The area of the Dominion is a little over 100,000 square miles, about one-half as great as that of the Yukon Territory.

Photo from Ewing Galloway, N.Y.

A Maori

Note the painted face and the matted garment.

People.—New Zealand has now about 1,300,000 people, most of whom are of British descent. The native Maoris are one of the most highly developed races found in the South Pacific. They are tall, muscular, and agile. Their skin is brown, and their features are clear-cut and pleasing. They are very intelligent, and have had little trouble in adapting themselves to civilized life. Yet, like all the natives of the Pacific Islands among whom the white man has come, their numbers are gradually decreasing. At present they number about 53,000.

Surface.—New Zealand is a land of mountains, lakes, and rivers. The mountains, known as the *Southern Alps*, extend in a lofty range, broken only by *Cook Strait*, from the south-west corner of South Island to East Cape a distance of nearly 1000 miles. A second chain runs almost at right angles to this from *Auckland* to *North Cape* and forms the Auckland Peninsula. The mountain scenery of South Island is especially magnificent. The south-west coast of the island is much indented by long, narrow inlets, surrounded by forested hills, which rise from the water's edge in peak after peak to their snow-clad summits. Through the green of the trees rippling streams sparkle here and there in the bright sunshine, or fall in glittering cascades over the steep cliffs, while in the upper valleys the snow of the glaciers gleams as though encrusted with diamonds. In the mountain valleys nestle many lakes of clear, cold water, and everywhere are short, rapid rivers running down to the ocean.

The mountains of North Island are famous for a very different reason. There are pools of boiling mud, which now and again send a column high into the air; there are lakes of hot water; there you may walk over land through which steam is bursting everywhere. There, too, is *Mount Tarawera*, which not so many years ago burst into eruption. Before the eruption there was a lake on this mountain; it was blown into the air, and a roaring crater, sending a column of steam to a height of three miles, took its place. The air was filled with steam and fine particles of rock, so that the sun was hidden, while a rain of hot water, boiling mud, and red-hot stones fell all about. A great fissure, nine miles long opened in the earth.

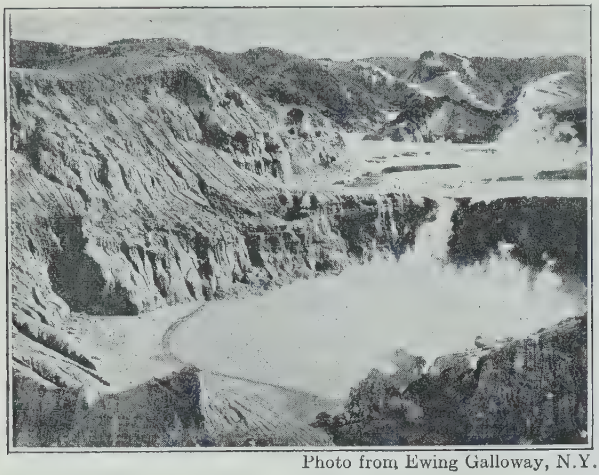


Photo from Ewing Galloway, N.Y.

The giant Crater of Waimangu Geyser
The crater is 280 by 400 feet in extent.

The lowland and coastal plains and the valleys between the mountain ranges, in which the greater number of the people live, are quite numerous and are spread over both North and South Island. The eastern slopes of the mountains of South Island pass into a great plain, and there, where the rainfall is less, are splendid grass-lands and rich soil for tillage. This plain, about 160 miles long by thirty miles in its greatest width, is called the *Canterbury Plain*, the largest in the islands. In North Island the principal plain is the lower basin of the *Waikato River*, which flows into the sea near Auckland.

Stewart Island is very mountainous and forest-clad. It is subject to volcanic eruptions and violent earthquake shocks. The inhabitants number only a few hundred.

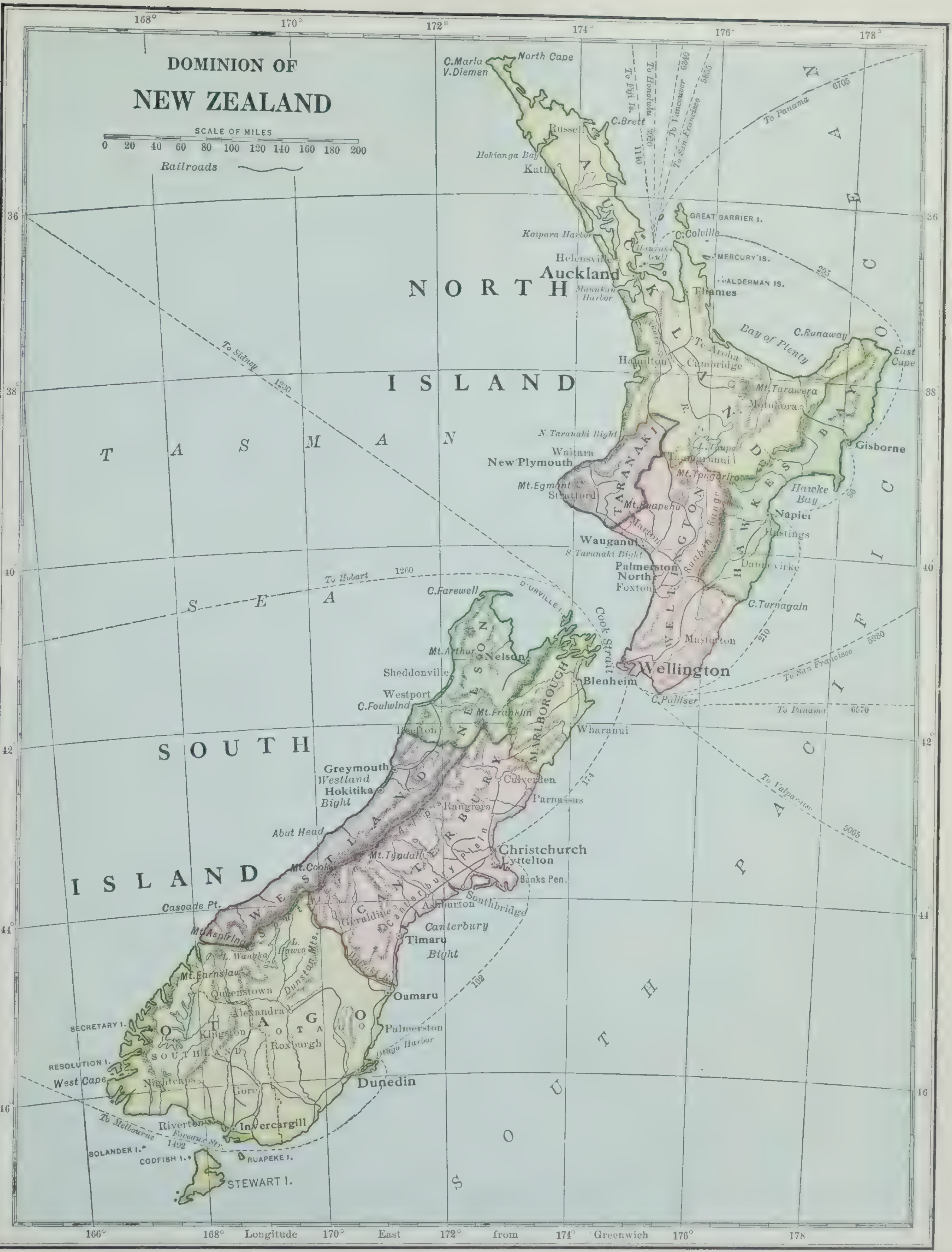
Climate.—New Zealand, unlike Australia, fears no drought. It lies in the path of the west winds which sweep over the islands all the year round, and which, cooled by the high mountains, bring abundant rain. Naturally, the rainfall is heaviest upon the western coast, but no part of the islands suffers from too scanty a supply. The islands lie in the South Temperate Zone, and their climate is mild and equable. In the north it is warm enough to admit of the growth of oranges, lemons, and other sub-tropical fruits. Even in the south frost is practically unknown, except on the mountains.

Birds.—New Zealand has practically no native four-footed animals. There are few snakes, and the lizards are harmless. There are, however, many birds. There are beautiful black swans, many parrots, and flocks of wild ducks. One of the most extraordinary birds is the kea parrot. It settles on the back of a sheep, pierces the flesh with the skill of a surgeon, and tears out the kidneys and the kidney fat, leaving the animal to die in agony. So great is the loss of sheep caused by the kea that the government pays a bounty for each bird destroyed. As many as 15,000 of them have been killed in a single year.

Photo from Ewing Galloway, N.Y.

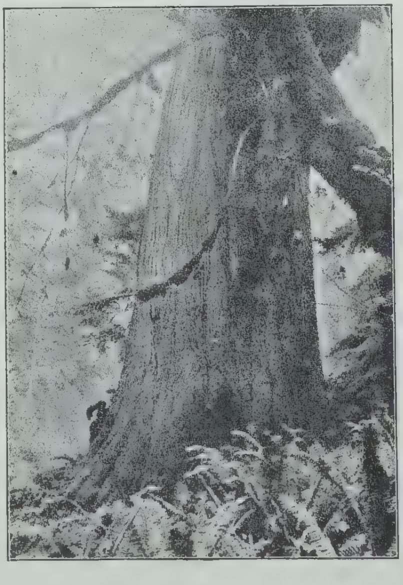
A Sheep Station in the Hills of New Zealand

An interesting bird is the kiwi, which has neither wings nor tail. It is about the size

DOMINION OF
NEW ZEALAND
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200
Railroads
NORTH ISLAND
SOUTH ISLAND
TASMAN SEA
SOUTH PACIFIC OCEAN
AUCKLAND
TARANAKI
WELLINGTON
HAWKES BAY
NELSON
MARLBOROUGH
WESTLAND
CANTERBURY
OTAGO
SOUTHLAND
C.Maria V.Diemen
North Cape
C.Brett
Russell
Hokianga Bay
Kaipara Harbor
Hauraki Gulf
GREAT BARRIER I.
C.Colville
MERCURY IS.
ALDERMAN IS.
Helensville
Auckland
Manukau Harbor
Thames
Bay of Plenty
C.Runaway
East Cape
Hamilton
Te Aroha
Cambridge
Mt.Tarawera
Rotorua
N.Taranaki Bight
Waitara
New Plymouth
Mt.Egmont
Stratford
L.Taupo
Taumarunui
Mt.Tongariro
Mt.Ruapehu
Gisborne
Hawke Bay
Napier
Hastings
Wanganui
S.Taranaki Bight
Palmerston North
Foxton
Ruahine Range
Dannevirke
C.Turnagain
Masterton
Wellington
C.Palliser
Cook Strait
D'URVILLE I.
C.Farewell
Mt.Arthur
Nelson
Sheddonville
Westport
C.Foulwind
Blenheim
Mt.Franklin
Reefton
Wharanui
Greymouth
Westland Bight
Hokitika
Culverden
Parnassus
Rangiora
Abut Head
Christchurch
Lyttelton
Banks Pen.
Mt.Tyndall
Mt.Cook
Southern Alps
Canterbury Plain
Ashburton
Southbridge
Cascade Pt.
Geraldine
Canterbury Bight
Timaru
Mt.Aspiring
L.Wanaka
L.Hawea
Dunstan Mts.
Waitaki R.
Mt.Earnslaw
Queenstown
Oamaru
Alexandra
SECRETARY I.
Kingston
Roxburgh
Palmerston
Otago Harbor
RESOLUTION I.
West Cape
Nightcaps
Gore
Dunedin
Riverton
Invercargill
Foveaux Str.
SOLANDER I.
CODFISH I.
RUAPEKE I.
STEWART I.
To Fiji Is. 1140
To Honolulu 3820
To Vancouver 6340
To San Francisco 6835
To Panama 6705
205
To Sidney 1230
To Hobart 1260
To San Francisco 5960
To Panama 6570
To Valparaiso 6065
To Melbourne 1492
210
114
102
86
168° 170° 172° 174° 176° 178°
36° 38° 40° 42° 44° 46°
166° 168° Longitude 170° East 172° from 174° Greenwich 176° 178

of a hen, has feathers like hairs, and lives among the dense fern beds which cover some parts of the islands. The kiwi is the last survivor of many varieties of wingless birds which lived in New Zealand long ago. One species of these extinct birds, called the moa, was twice as large as an ostrich, and its eggs were about a foot in length. Both skeletons and eggs of the moa have been found in New Zealand.

Agriculture.—The chief industry of New Zealand and the main source of its wealth is the raising of sheep, both for mutton and for wool. The industry is carried on scientifically. The moist climate and the favorable soil have encouraged the growing of English grasses, with the result that New Zealand mutton has so improved in quality that it brings a larger price in the British market than that from any other country. The packers take great care in freezing the mutton and in its proper handling, so that it may reach its destination in the best possible condition. The ranges provide pasturage for about 25,000,000 sheep, from which an immense quantity of wool is clipped. Wool forms one-third of the total exports.



The Kauri Pine

Although rabbits are not so numerous as in Australia, they are just as great a pest in the sheep districts. All the efforts of both the government and the farmers have not succeeded in preventing their increase. As in Australia, frozen rabbits and rabbit skins are important exports.

Dairy-farming is also of importance, second only to the export trade in mutton, wool, and sheep skins. The introduction of improved milking-machinery has greatly helped to overcome the lack of labor and has very much increased the production. In 1926 the cattle numbered almost three and a half millions. Immense quantities of butter and cheese are manufactured, and frozen meat, hides, and tallow are exported. Apple-growing is also an important industry. The care taken in boxing the apples for market has given the farmers an enviable reputation for the excellent condition in which their fruit reaches the consumer. New Zealand has many small farms on which are produced oats, wheat, and barley, as well as dairy products. The wild flax, which yields a strong fibre for rope-making, is also a valuable crop.

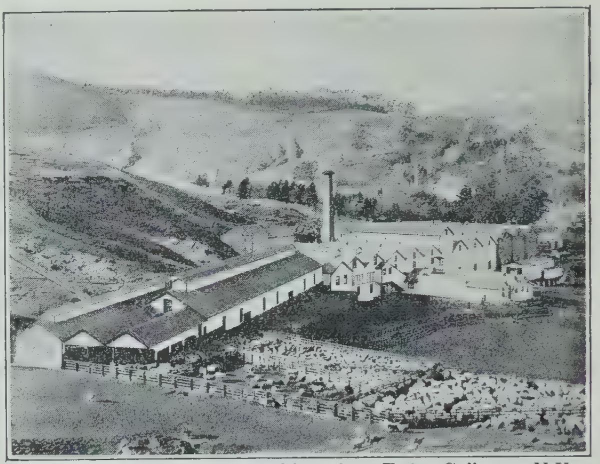


Photo from Ewing Galloway, N.Y.

A Meat-Freezing Station in the Hills

Mining.—Although the islands are rich in coal, the great distance from the local markets and the difficulty of procuring labor have hindered the development of the mines. Gold is found in large quantities; in fact, since its discovery in 1857, about $460,000,000 worth of this precious metal has been mined. Copper, silver, and iron are also found, but not in paying quantities. Excellent building stone and marble are quarried for local use. The oil fields have not yet been very much worked, but a profitable industry has recently arisen in the distillation of oil from the peat of the swamps and low-lying lands, which is rich in kauri gum.

Forest Wealth.—The heavy rainfall and the mild climate make the natural vegetation of New Zealand luxuriant. The mountain glens are carpeted with ferns of many kinds, ranging from delicate, lacy fronds to huge tree-ferns. So common is the giant fern that it has become the emblem of New Zealand. The upper plateaus are covered with bracken. Much of the land is forested with stately pines, especially on the western mountain-slopes.

The most valuable of these pines is the kauri. This giant of the forest sends up a straight, clean trunk for sixty or seventy feet before it branches. Some of them measure forty to fifty feet in circumference around the base. The timber of the kauri pine is hard and durable, and is eagerly sought after for interior finishings. The tree also yields a gum which is used in the making of varnish and linoleum. The gum exudes in big lumps in the forks of the lowest branches. The best gum is found buried in the swamps where long ago were forests of kauri trees. After the tree has fallen and rotted away, the lump of gum remains. Many men are busy in the kauri districts digging out this buried gum, which has been hidden deep down in the earth for hundreds of years. North Island has two extensive forests of kauri pines.

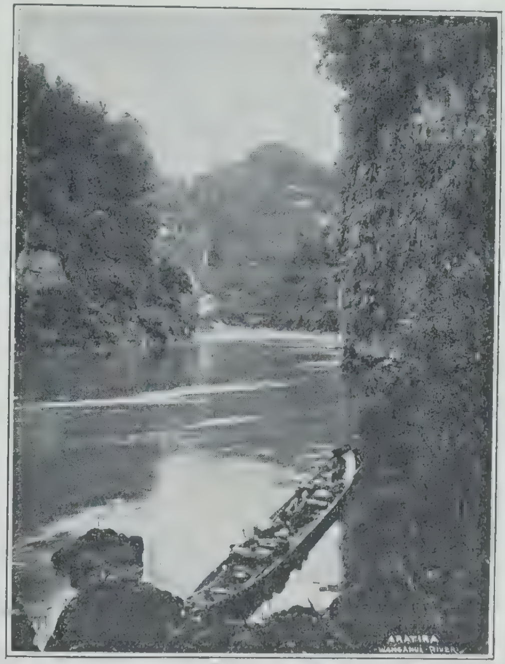


Photo from Ewing Galloway, N.Y.

A River Scene in New Zealand

The forests also furnish red, black, and white pine. The wood of the white pine is used in making the light boxes in which the dairy products of the country are shipped, but the demand for this wood is so great that there is serious danger of the supply becoming exhausted. The forests of New Zealand at present furnish sufficient lumber for the needs of the people.

Manufacturers.—The manufacturing industries are mainly those closely connected with agriculture. The chief are the freezing of beef and mutton, tanning, and the making of woollen and leather goods, butter, cheese, soap, candles, boots and shoes, and flour. There are also quite a large number of sawmills employed in the production of sashes, doors, and boxes for the packing of fruit and dairy products.

Manufacturing is increasing, but the lack of labor is a serious drawback to its progress. For example, in spite of the immense quantities of wool produced, the woollen factories fall far short of supplying the local demand. The abundance of water-power furnished almost everywhere by the rapid mountain streams is very favorable to industry, and with its development into electrical energy great progress should be made in manufacturing in the near future.

Trade and Commerce.—The export trade is large and is increasing year by year. The chief exports are wool, butter, frozen mutton and beef, cheese, preserved milk, hides and skins, tallow, and kauri gum. Almost two-thirds of the total exports are sent to Great Britain. The remainder is sent principally to the United States, Australia, and Canada. Great Britain provides New Zealand with the greater part of her imports, chiefly manufactured goods. The United States, Australia, and Canada also ship large quantities of manufactured goods, while the Fiji Islands supply the sugar. The chief imports are textiles, iron and steel goods, automobiles, agricultural implements, oil, sugar, tea, coffee, and tobacco.

Transportation.—Over ninety per cent of the trade of New Zealand is carried in ships of British registry. Regular passenger service is maintained with Great Britain, Australia, Canada, the United States, and the islands of the Pacific, while the cable service is excellent. On the islands themselves there are about 3,200 miles of railway, all owned by the government, and in addition 117 miles privately owned. All the principal towns have electric street railway systems. Telephone and telegraph lines connect all the chief places.

Cities and Towns.—The capital of New Zealand is *Wellington*, the second city in size, with a population of about 121,000. It is finely situated on an inlet of Cook Strait on North Island, and has an excellent harbor six miles long by five miles broad, walled in by abrupt hills. The public buildings, including the Legislative Buildings, Government House, and University College, are very handsome. The Botanical Gardens are over one hundred acres in extent. In addition to a large shipping trade, the city has many manufactures, such as tanning, meat-packing, and ship-building.

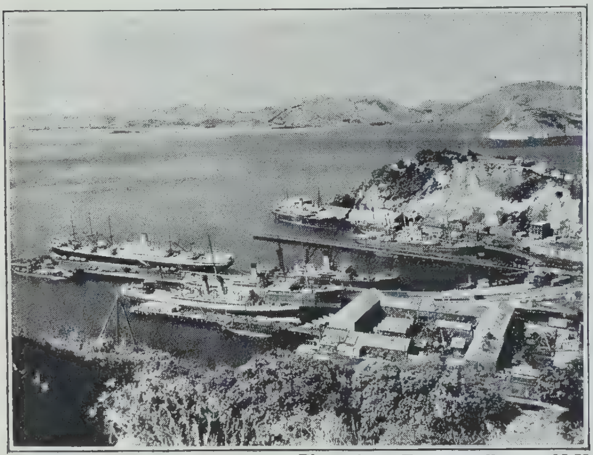


Photo from Ewing Galloway, N.Y.

The Harbor of Port Chalmers, New Zealand

New Zealand has many excellent small harbors.

Auckland, the largest city and the former capital, lies at the mouth of an arm of the *Hauraki Gulf* on the east coast of North Island. The *Auckland Isthmus* at this point is very narrow, so that the city is only six miles distant from a harbor on the west coast. Auckland harbor, which is one of the finest in New Zealand, can be approached by the largest vessels at the lowest tide, and is splendidly equipped with wharves and graving-docks. The city has fine public buildings and parks, and has many industries, the principal being sugar-refining, ship-building, and brick-making.

Christchurch, the third city in size, is situated a little to the north of *Banks Peninsula* on the east coast of South Island. The little river *Avon* winds through it, adding much to its picturesqueness. The city owes its importance to its situation on the Canterbury Plain, with its grain and cattle. The industries include the preparation of wool for shipping, meat-packing, and the manufacture of boots and shoes. *Dunedin*, the fourth city in size, lies on a steep hillside at the head of *Otago Harbor*, a narrow inlet about two miles wide, on the south-east coast of South Island. On the land side it is surrounded by forest, thus giving it a very beautiful appearance. The harbor has to be dredged constantly so as to allow even small vessels to approach at high tide. The principal industries are in wool and frozen meat, but the main source of wealth is in the rich gold fields near at hand. There are many towns in New Zealand, such as *Napier*, *Wanganui*, *Hamilton*, *Hastings*, *Invercargill*, *Timaru*, and *Port Chalmers*, but all have less than 25,000 people and owe their importance to local conditions.

ATTACHED AND MANDATED TERRITORY

Attached Islands.—There are attached to New Zealand a number of small islands. Among these are the *Auckland Islands*, which lie about 200 miles south of Stewart Island. They are uninhabited, but the government maintains a depot there containing provisions and clothing for the use of shipwrecked sailors. The *Chatham Islands* have a small population, including about 250 Europeans. The *Cook Islands* are inhabited by about 8,000 people. They export chiefly bananas, oranges, tomatoes, coconuts, and copra, mainly to New Zealand. *Kermandec Island* is uninhabited. The coasts of *Ross Sea* are under the control of the Governor of New Zealand. The *Union Islands* consist of five clusters of islets, having a total population of about 1,000.

Mandated Territory.—Under a mandate from the League of Nations the *Territory of Western Samoa* is administered by the government of New Zealand. The islands, which lie in the South Pacific about 1500 miles north-east of New Zealand, are volcanic in origin and very mountainous, with extremely fertile soil and luxuriant vegetation. As they lie in the path of the south-east trade winds, the rainfall is heavy. The principal products are copra, rubber, raw sugar, cacao beans, and tropical fruits. The natives, however, live chiefly by fishing. The two principal islands are *Savaii* and *Upolu*. The capital, *Apia*, on the latter island, has an excellent harbor.

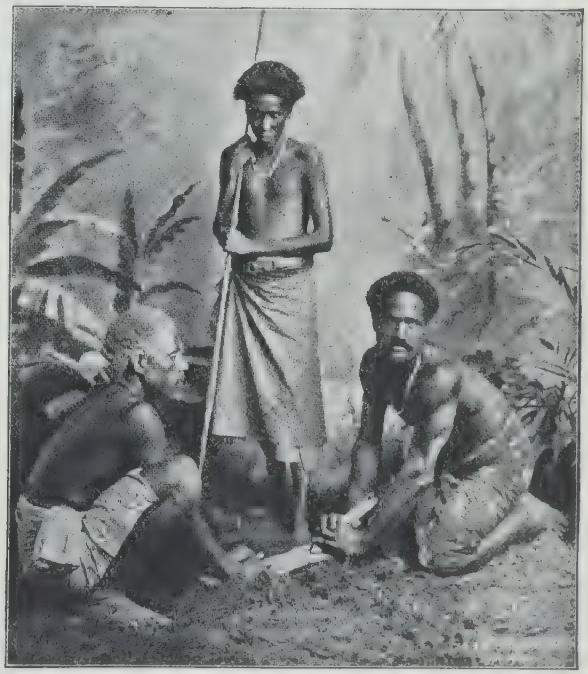
Helps.—On the map locate New Zealand in relation to Canada; to Australia. Describe briefly the surface. Compare the climate with that of New South Wales and Southern Alberta. Compare the birds of New Zealand with those of Australia. Compare the forests of New Zealand and South Africa. What are the chief industries of New Zealand? Compare sheep-farming in New Zealand and Australia. What is the importance of dairy-farming? Why do New Zealand fruits and dairy products command such a high price in the English market? Make a list of the natural products and show how the manufactures are connected with these. What Canadian products should find a ready market in New Zealand? Why has New Zealand such a large trade with the British Isles? Locate on the map the chief cities and account for their location and importance. Of what benefit is Samoa to New Zealand?

THE ISLANDS OF THE PACIFIC

Lying in the South Pacific are many other islands which belong either wholly or in part to Great Britain. The most important of these are the *Fiji Islands*, the *Tonga Islands*, the *New Hebrides*, the *Gilbert and Ellice Islands*, and the *British Solomon Islands*.

The Fiji Islands.—The Fiji Islands lie in the Pacific Ocean about 1,100 miles from the coast of New Zealand. They number about 250 in all, of which about eighty are inhabited. They are volcanic in origin and are surrounded by coral reefs. The largest of the islands are known as *Viti Levu* and *Vanua Levu*. There are fewer than 4,000 Europeans in the islands, the remainder of the population being Fijians and East Indians. The capital is *Suva* on the south coast of Viti Levu. It is a port of call for steamers on their way from Vancouver to Australia.

The islands are mountainous, in many places rising to a height of more than 4,000 feet, their sides covered with vegetation. Streams are abundant and are much used by the planters during the dry seasons. The climate is rather healthful than otherwise, but the islands suffer severely from hurricanes, and earthquakes are not infrequent. The principal products are raw sugar, copra, molasses, and tropical fruits. Much sugar is shipped to New Zealand and Australia.



Natives of the Solomon Islands—Producing Fire

The Tonga Islands. — The Tonga, or Friendly Islands, are governed by a native ruler under the protection of Great Britain. They consist of three groups of islands. Some are low-lying coral formations, while others are high and mountainous. There are two active volcanoes in the group. The climate is very mild and healthful. The trade is almost entirely in copra.

The New Hebrides.—The New Hebrides are a chain of islands in the western Pacific, about thirty in number. They rest upon a coral foundation, but there are many active volcanoes. All are wooded and some very mountainous. The chief products are copra, maize, millet, coffee, cocoa, cotton, and bananas, but most of the land in the islands is still uncleared. Some timber is also exported. The government of the islands is under the joint control of British and French officials.

The Gilbert and Ellice Islands Colony.—This colony includes several groups of islands: (1) the *Ellice Islands;* (2) *Fanning Island*, *Washington Island*, and *Ocean Island;* (3) *Christmas Island*, and (4) the *Gilbert Islands.* All the islands are of coral formation and low-lying. Very little trade is carried on, the chief products being copra and fruits. The inhabitants live on coconuts, bread-fruit, and yams. Christmas Island, over one hundred miles in circumference, is the largest atoll in the Pacific. Fanning Island exports copra and guano. Ocean Island has a very large phosphate industry, thoroughly organized. The work is carried on by Chinese and Japanese laborers and by the natives, under the supervision of white foremen. There are about eighty miles of light railway on the island, leading from the mines to the wharves. The product is sent to the United States and Australia. A powerful wireless station on the island maintains communication with the Fiji Islands and Australia. There are about 30,000 natives and 250 Europeans in the entire colony.

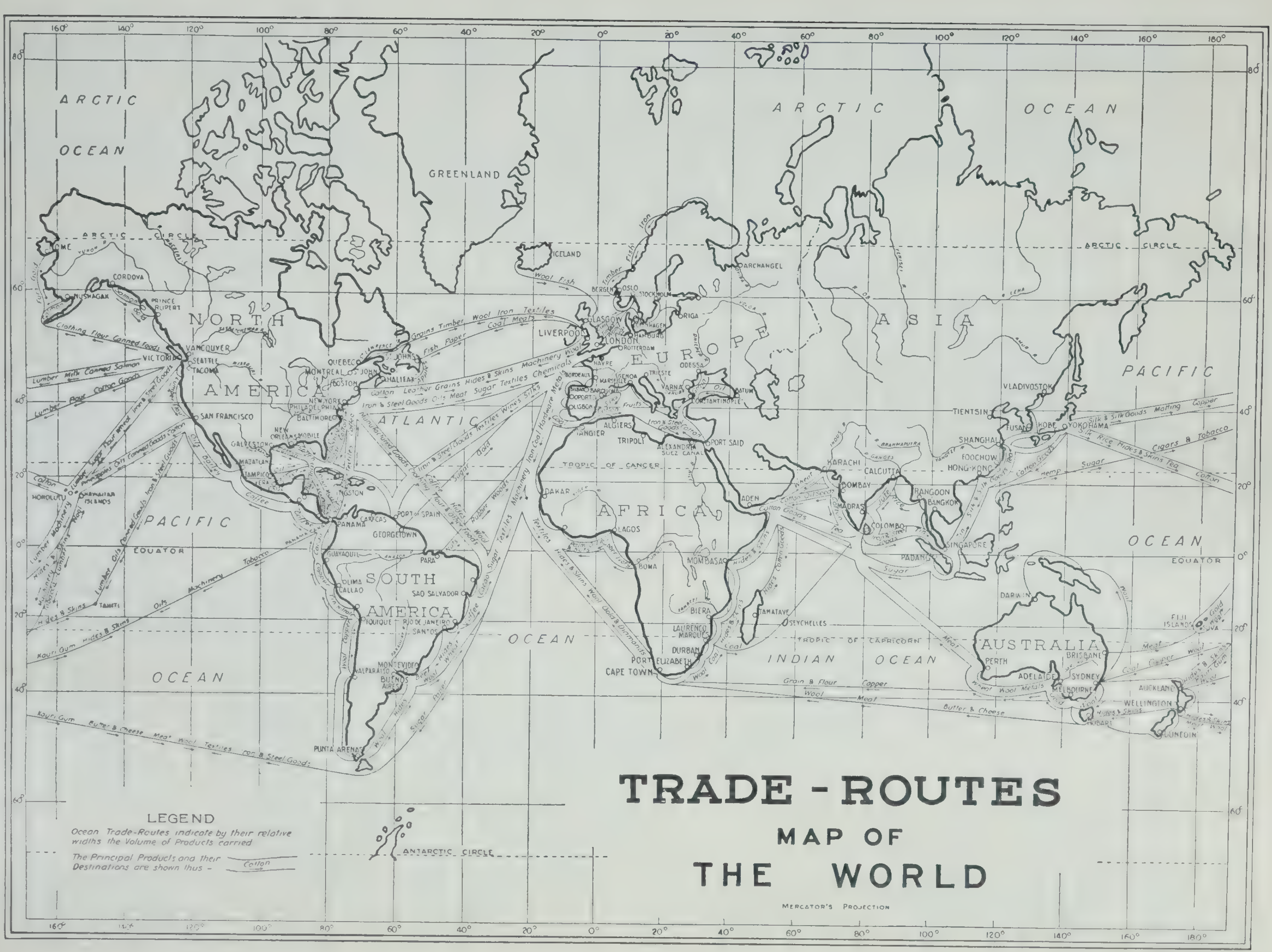
The British Solomon Islands.—This colony is an archipelago, 500 miles east of New Guinea. The islands stretch 600 miles southeast in two parallel chains. Some of them are over a hundred miles long and from thirty to forty miles wide. They are nearly all volcanic, and the mountains are densely wooded to their summits. There is an extraordinarily heavy rainfall, exceeding 500 inches annually in the mountains, and 150 inches on the plains. The climate is very warm. The chief products are coconuts, rubber, sweet potatoes, pineapples, and bananas. Copra is the most important export. Some of the islands of this group are under the government of the Australian Commonwealth.

Pitcairn Island.—The island is inhabited by the descendants of the mutineers of the *Bounty*, who in 1790 took refuge there. The surface is mountainous, the climate lovely, and the soil fertile. The chief products are sweet potatoes, sugar-cane, pineapples, and fruits. Coffee is also grown. There is a herd of wild goats on the island.

Nauru Island.—The island, which is administered by Great Britain under the League of Nations, lies in the Pacific south of the equator. It is a circular coral island, about twelve miles in circumference, surrounded by a reef. The population includes about 140 Europeans. The interior is a high plateau, with immense phosphate deposits. The mining and export of this mineral is the chief industry of the island. Copra is also exported. The island has a powerful wireless station.

Small Pacific Islands.—There are many other small islands in the Western Pacific that are not included in any of the groups already mentioned. Among these are *Ducie Island*, the *Phoenix Group*, *Starbuck Island*, *Malden Island*, *Palmyra Island*, *Jarvis Island*, and the *Baker Islands.* All of these are either uninhabited or have very few people living on them. They are of little importance commercially, but Malden Island has large deposits of guano.

Helps.—On the map locate the islands of the Pacific mentioned in this section. What is the general character of their surface and climate? What are the products of each? What is the importance of each to the Empire?



TRADE - ROUTES

MAP OF

THE WORLD

MERCATOR'S PROJECTION

LEGEND

Ocean Trade-Routes indicate by their relative widths the Volume of Products carried

The Principal Products and their Destinations are shown thus - Cotton

REFERENCE TABLES

CHIEF COUNTRIES OF THE BRITISH EMPIRE

For other countries in the Empire see Diagram on page 216

	Area sq. mi.	Population
Great Britain and Ireland	94,633	44,200,000
England	50,874	35,681,019
Northern Ireland	5,237	1,256,000
Scotland	30,405	4,882,497
Wales	7,466	2,205,680
Irish Free State	27,000	3,165,000
Canada, Dominion of	3,682,123	8,899,779
New Brunswick	27,985	387,876
Nova Scotia	21,428	523,837
Ontario	407,262	2,933,662
Quebec	591,834	2,361,199
British Columbia	355,855	524,582
Prince Edward Island	2,184	88,615
Manitoba	251,832	639,056
Alberta	255,285	607,584
Saskatchewan	251,700	820,738
Yukon Territory	207,076	4,157
Northwest Territories	1,309,682	7,988

	Area sq. mi.	Population
India	1,805,332	318,942,480
Australia, Commonwealth of	2,974,581	5,435,734
New South Wales	309,432	2,100,371
Queensland	670,500	755,972
South Australia	380,070	495,160
Tasmania	26,215	213,780
Victoria	87,884	1,531,280
Western Australia	975,920	332,732
Northern Territory	523,620	3,867
Capital Territory	940	2,572
New Zealand, Dominion of	103,568	1,295,806
Newfoundland	157,734	253,541
South Africa, Union of	472,347	6,928,580
Cape of Good Hope	276,966	2,782,719
Natal	35,284	1,429,398
Orange Free State	49,647	628,827
Transvaal	110,450	2,087,636

CITIES AND TOWNS IN CANADA WITH POPULATION OF 7,000 AND OVER

ONTARIO

Toronto	521,893
Hamilton	114,151
Ottawa	107,843
London	60,959
Windsor	38,591
Brantford	29,440
Kitchener	21,763
Kingston	21,753
Sault Ste. Marie	21,092
Peterborough	20,994
Fort William	20,541
St. Catharines	19,881
Guelph	18,128
Stratford	16,094
St. Thomas	16,026
Port Arthur	14,886
Sarnia	14,877
Niagara Falls	14,764
Chatham	13,256
Galt	13,216
Belleville	12,206
Owen Sound	12,190
Oshawa	11,940
North Bay	10,692
Brockville	10,043
Woodstock	9,935
Welland	8,654
Sudbury	8,621
Pembroke	7,875
Orillia	7,631
Lindsay	7,620
Cornwall	7,419
Walkerville	7,059
Midland	7,016

QUEBEC

Montreal	618,506
Quebec	95,193
Verdun	25,001
Hull	24,117
Sherbrooke	23,515
Three Rivers	22,367
Westmount	17,593
Lachine	15,404
Outremont	13,249
St. Hyacinthe	10,859
Shawinigan Falls	10,625
Levis	10,470
Valleyfield	9,215
Joliette	9,113
Chicoutimi	8,937
Sorel	8,174
Thetford Mines	7,886
St. Jean	7,734
Rivière du Loup	7,703
Grand Mère	7,631

NEW BRUNSWICK

St. John	47,166
Moncton	17,488
Fredericton	8,114

NOVA SCOTIA

Halifax	58,372
Sydney	22,545
Glace Bay	17,007
Amherst	9,998
New Glasgow	8,974
Sydney Mines	8,327
Dartmouth	7,899
Truro	7,562
Yarmouth	7,073

PRINCE EDWARD ISLAND

Charlottetown	12,347

MANITOBA

Winnipeg	191,998
Brandon	16,443
St. Boniface	14,187

SASKATCHEWAN

Regina	37,329
Saskatoon	31,234
Moose Jaw	19,039
Prince Albert	7,873

ALBERTA

Calgary	65,291
Edmonton	65,163
Lethbridge	10,735
Medicine Hat	9,536

BRITISH COLUMBIA

Vancouver	117,217
Victoria	38,727
New Westminster	14,495
Nanaimo	9,088
North Vancouver	7,652

STATES OF THE UNITED STATES

	Area	Population
Alabama	51,998	2,348,174
Arizona	113,956	334,162
Arkansas	53,335	1,752,204
California	158,297	3,426,861
Colorado	103,948	939,629
Connecticut	4,965	1,380,631
Delaware	2,370	223,003
Dist. of Columbia	70	437,571
Florida	58,666	968,470
Georgia	59,265	2,895,832
Idaho	83,888	431,866
Illinois	56,665	6,485,280
Indiana	36,354	2,930,390
Iowa	56,147	2,404,021
Kansas	82,158	1,769,257
Kentucky	40,598	2,416,630
Louisiana	48,506	1,798,509
Maine	33,040	768,014
Maryland	12,327	1,449,661
Massachusetts	8,266	3,852,356
Michigan	57,980	3,668,412
Minnesota	84,682	2,387,125

	Area	Population
Mississippi	46,865	1,790,618
Missouri	69,420	3,404,055
Montana	146,997	548,889
Nebraska	77,520	1,296,372
Nevada	110,690	77,407
New Hampshire	9,341	443,083
New Jersey	8,224	3,155,900
New Mexico	122,634	360,350
New York	49,204	10,385,227
North Carolina	54,426	2,559,123
North Dakota	70,837	646,872
Ohio	41,040	5,759,394
Oklahoma	70,057	2,028,283
Oregon	96,699	783,389
Pennsylvania	45,126	8,720,017
Rhode Island	1,248	604,397
South Carolina	30,989	1,683,724
South Dakota	77,615	636,547
Tennessee	42,022	2,337,885
Texas	265,896	4,663,228
Utah	84,990	449,396
Vermont	9,564	352,428

STATES OF THE UNITED STATES—Continued

	Area	Population		Area	Population
Virginia	42,627	2,309,187	Wisconsin	56,066	2,632,067
Washington	69,127	1,356,621	Wyoming	97,914	194,402
West Virginia	24,170	1,463,701			

THE LARGEST CITIES OF THE UNITED STATES

	Population		Population		Population
New York, N.Y.	5,620,048	Portland, Ore.	258,288	Scranton, Pa	137,783
Chicago, Ill.	2,701,705	Denver, Colo.	256,491	Grand Rapids, Mich	137,634
Philadelphia, Pa.	1,823,779	Toledo, Ohio	243,164	Paterson, N. J	135,875
Detroit, Mich	993,678	Providence, R. I	237,595	Youngstown, Ohio	132,358
Cleveland, Ohio	796,841	Columbus, Ohio	237,031	Springfield, Mass	129,614
St. Louis, Mo	772,897	Louisville, Ky	234,891	Des Moines, Iowa	126,468
Boston, Mass	748,060	St. Paul, Minn	234,698	New Bedford, Mass	121,217
Baltimore, Md	733,826	Oakland, Cal	216,261	Fall River, Mass	120,485
Pittsburgh, Pa	588,343	Akron, Ohio	208,435	Trenton, N. J	119,289
Los Angeles, Cal	576,673	Atlanta, Ga	200,616	Nashville, Tenn	118,342
Buffalo, N. Y	506,775	Omaha, Neb	191,601	Salt Lake City, Utah	118,110
San Francisco, Cal	506,676	Worcester, Mass	179,754	Camden, N. J	116.309
Milwaukee, Wis	457,147	Birmingham, Ala	178,806	Norfolk, Va	115.777
Washington, D. C	437,571	Syracuse, N. Y	171,717	Albany, N. Y	113,344
Newark, N. J	414,524	Richmond, Va	171,667	Lowell, Mass	112,759
Cincinnati, Ohio	401,247	New Haven, Conn	162,537	Wilmington, Del	110,168
New Orleans, La	387,219	Memphis, Tenn	162,351	Cambridge, Mass	109,694
Minneapolis, Minn	380,582	San Antonio, Tex	161,379	Reading, Pa	107,784
Kansas City, Mo	324,410	Dallas, Tex	158,976	Fort Worth, Tex	106,482
Seattle, Wash	315,312	Dayton, Ohio	152,559	Spokane, Wash	104,437
Indianapolis, Ind	314,194	Bridgeport, Conn	143,555	Kansas City, Kans	101,177
Jersey City, N. J	298,103	Houston, Tex	138,276	Yonkers, N. Y	100,176
Rochester, N. Y	295,750	Hartford, Conn	138,036		

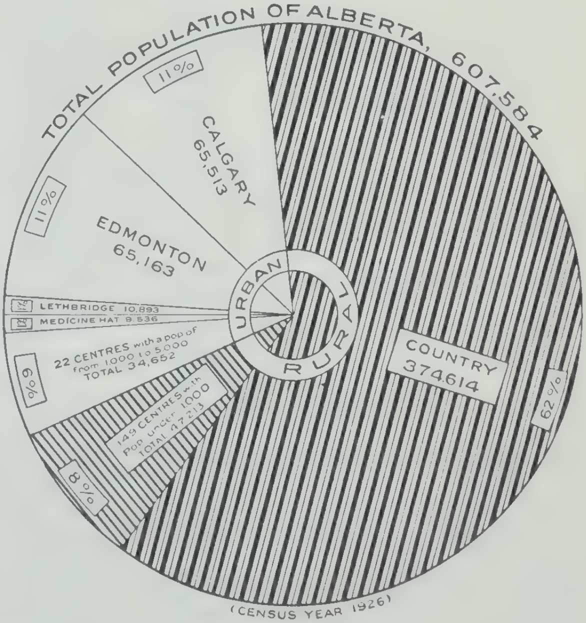
CITIES AND TOWNS OF ALBERTA

CITIES

	Population
Calgary	65,291
Edmonton	65,163
Lethbridge	10,735
Medicine Hat	9,536
Red Deer	2,021
Wetaskiwin	1,884

TOWNS

	Population
Blairmore	1,609
Camrose	2,002
Cardston	2,034
Coleman	2,044
Drumheller	2,578
Edson	1,493
Hanna	1,400
High River	1,377
Lacombe	1,151
Macleod	1,715
Magrath	1,202
Olds	1,003
Pincher Creek	1,003
Ponoka	1,931
Raymond	1,799
Stettler	1,127
Taber	1,342
Vegreville	1,721
Vermilion	1,203
Wainwright	1,028



THE LARGEST CITIES OF THE WORLD

	Population		Population		Population
London, England	7,480,201	Vienna, Austria	1,865,780	Hamburg, Germany	1,079,092
New York, U.S.A	5,620,048	Philadelphia, U.S.A	1,823,779	Sydney, Australia	1,039,390
Berlin, Germany	4,013,588	Leningrad, Russia	1,611,102	Glasgow, Scotland	1,034,174
Paris, France	2,871,429	Hankow, China	1,583,900	Hangchow, China	1,000,000
Chicago, U.S.A	2,701,705	Shanghai, China	1,500,000	Detroit, U.S.A	993,678
Buenos Aires, Argentina	2,310,441	Bombay, India	1,175,914	Warsaw, Poland	936,713
Osaka, Japan	2,114,804	Rio de Janeiro, Brazil	1,157,873	Budapest, Hungary	928,996
Moscow, Russia	2,018,286	Calcutta, India	1,132,246	Birmingham, England	919,414
Tokyo, Japan	1,995,567	Mexico, Mexico	1,080,000	Melbourne, Australia	912,130

THE LARGEST CITIES OF THE WORLD—Continued

	Population		Population		Population
Canton, China	900,000	Barcelona, Spain	745,711	Pittsburgh, U.S.A.	588,343
Constantinople, Turkey	880,998	Baltimore, U.S.A	733,826	Sao Paulo, Brazil	579,033
Milan, Italy	877,424	Copenhagen, Denmark	731,496	Los Angeles, U.S.A.	576,673
Naples, Italy	852,362	Manchester, England	730,307	Lyon, France	570,840
Peking, China	811,138	Amsterdam, Netherlands	718,046	Havana, Cuba	562,968
Liverpool, England	802,940	Cologne, Germany	698,064	Breslau, Germany	554,801
Brussels, Belgium	801,656	Munich, Germany	680,704	Rotterdam, Netherlands	552,343
Tientsin, China	800,000	Kyoto, Japan	679,963	Bangkok, Siam	541,000
Cleveland, U.S.A.	796,841	Leipzig, Germany	679,322	Changsha, China	535,800
Madrid, Spain	791,511	Prague, Czechoslovakia	676,657	Madras, India	526,911
Cairo, Egypt	790,939	Marseille, France	652,196	Toronto, Canada	521,893
St. Louis, U.S.A.	772,897	Kobe, Japan	644,212	Turin, Italy	520,164
Nagoya, Japan	768,558	Dresden, Germany	618,684	Buffalo, U.S.A.	506,775
Rome, Italy	758,569	Montreal, Canada	618,506	San Francisco, U.S.A.	506,676
Wanhsien, China	756,600	Chungking, China	608,100	Soochow, China	500,000
Boston, U.S.A.	748,060				

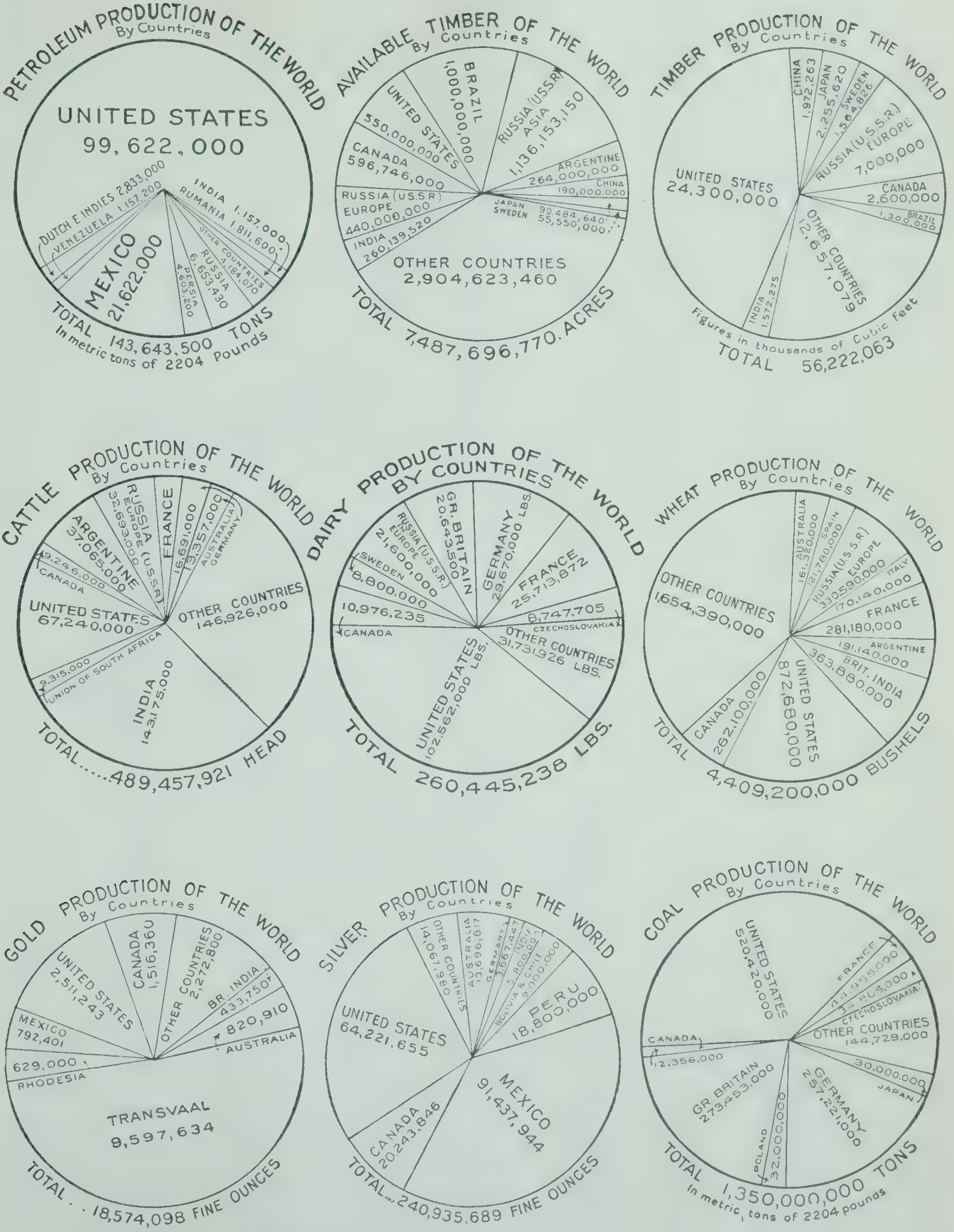
AREA AND POPULATION OF COUNTRIES OF THE WORLD

Figures from Statesman's Year-Book, 1927

	Area	Population
NORTH AMERICA (Approx.)	8,500,000	143,000,000
Alaska	586,400	55,036
CentralAmerica		
British Honduras	8,598	45,317
Canal Zone, The	553	27,692
Costa Rica	23,000	507,193
Guatemala	42,353	2,004,900
Honduras	44,275	773,408
Nicaragua	51,660	638,119
Panama	32,380	442,486
Salvador	34,126	1,634,000
Greenland	46,740	14,355
Mexico	767,198	14,234,799
United States of America	2,973,776	117,136,000
West Indies	91,000	9,646,000
Cuba	44,164	3,470,217
Dominican Republic	19,332	897,405
Haiti, Republic of	10,204	2,028,000
Porto Rico	3,435	1,299,809
SOUTH AMERICA (Approx.)	7,484,000	63,747,000
Argentina	1,153,119	9,613,305
Bolivia	514,155	2,990,220
Brazil	3,285,318	30,635,605
Chile	290,084	3,963,462
Colombia	440,846	6,617,833
Ecuador	109,978	1,562,500
Guiana, Dutch	54,291	139,869
Guiana, French	34,740	44,202
Paraguay	61,647	853,321
Peru	532,047	5,550,000
Uruguay	72,153	1,677,686
Venezuela	393,874	2,563,334
EUROPE (Approx.)	3,864,000	454,000,000
Albania	17,374	831,877
Andorra	191	5,231
Austria	32,369	6,535,363
Belgium	11,755	7,811,876
Bulgaria	39,814	5,483,125
Czechoslovakia	54,207	13,613,172
Danzig	754	384,000
Denmark	16,568	3,434,555
Esthonia	18,354	1,115,000
Finland	132,642	3,526,359
France	212,659	40,743,851
Germany	181,714	63,118,782
Greece	49,912	5,810,221
Hungary	35,875	8,368,273
Iceland	39,709	99,863
Italy	119,714	40,548,683
Kingdom of the Serbs, Croats, and Slovenes	96,134	12,017,323
Latvia	24,440	1,844,805
Liechtenstein	65	10,716
Lithuania	59,633	2,229,876
Luxemburg	999	260,767
Monaco	8	22,153
Netherlands, The	13,210	6,865,314
Norway	124,964	2,649,775
Poland	149,958	29,249,000
Portugal	35,490	6,032,991
Rumania	122,282	17,393,149
*Russia	8,186,144	139,753,900
San Marino	38	12,952
Spain	194,800	22,127,699
Sweden	173,105	6,053,562
Switzerland	15,940	3,936,330
†Turkey	10,882	1,891,000
ASIA (Approx.)	17,073,000	867,000,000
Afghanistan	245,000	8,000,000
Arabia	1,000,000	7,000,000
Bhutan	20,000	250,000
China	4,279,170	318,653,000
China Proper	1,534,420	302,113,000
Manchuria	363,610	12,740,000
Mongolia	1,367,600	1,800,000
Sin-Kiang	550,340	2,000,000
Tibet	463,200	2,000,000
East Indies, Dutch	733,642	51,013,878
Indo-China, French	274,385	19,636,137
Japan	260,707	83,455,137
Nepal	54,000	5,600,000
Persia	628,000	12,000,000
Siam	200,148	9,831,000
Siberia, see Russia		
Syria	60,000	3,000,000
Transcaucasia	74,499	5,421,000
Turkestan, see Russia		
Turkey, Asiatic, see Turkey in Europe		
AFRICA (Approx.)	11,514,000	134,000,000
Abyssinia	350,000	10,000,000
Algeria	222,180	5,802,464
Angola	484,800	4,119,000
Belgian Congo	909,654	8,500,000
Egypt	12,023	14,168,756
Equatorial Africa (French)	975,635	3,124,172
Eritrea	45,754	402,793
Libya	975,340	750,000
Morocco	218,525	5,310,000
Mozambique	426,712	3,120,000
Somaliland (Italian)	405,000	1,000,000
Somaliland (French)	5,790	208,000
Tunis	48,300	2,095,090
West Africa (French)	1,384,845	13,255,430
AUSTRALASIA (Approx.)	3,457,000	7,630,000

*Figures for Russia include the whole of the Union of Soviet Socialist Republics.

†Figures for Turkey include both European and Asiatic Turkey.



WORLD TRADE DIAGRAMS

PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

ā	as *a* in ale.	ĕ	as *e* in end.	ū	as *u* in use.	ch	as *ch* in chair.
ă	" *a* " am.	ī	" *i* " ice.	ŭ	" *u* " up.	g	" *g* " go.
ah	" *a* " arm, car.	ĭ	" *i* " ill.	ōō	" *oo* " food.	ng	" *ng* " sing.
aw	" *a* " all.	ō	" *o* " old.	oŏ	" *oo* " foot.	zh	" *z* " azure
ē	" *e* " eve.	ŏ	" *o* " odd.	ow	" *ow* " cow.		

Abyssinia	ab-is-sin′-e-a.
Acapulco	ah′-kah-pool′-ko.
Addis Ababa	ăd′-dis ăb-ă′-bă.
Aden	ā′-den.
Aegean	ē-jē′-an.
Afghanistan	ahf-gahn-is-tahn′.
Agra	ăg′-ră.
Aisne	ain.
Ajaccio	ah-yaht′-chō.
Ajmer-Merwara	aj′-mĕr-mĕr-waw′-ra.
Aleutian	ah-lu′-shăn.
Alsace	ahl-sahs′.
Amur	ah-moor′.
Andaman	an-dă-man′.
Andorra	an-dor′-ra.
Antananarivo	an-ta-na-na-rē′-vō.
Anticosti	an-tĭ-kos′-tĭ.
Antigonish	ant′-ig-o-nĭsh′.
Antigua	an-tee′-gă.
Apia	ā-pī′-ă.
Appalachian	ap-pa-lā′-chĕ-an.
Aral	ahr′-al.
Arequipa	ah-rā-kee′-pah.
Arkansas	ahr′-kan-saw.
Arras	ăr-răh.
Ascotan	as-cō′-tăn.
Ashanti	ash-shăn-tee′.
Astrakhan	ăs′-tra-kan′.
Asuncion	a-sōōn′-se-on.
Azerbaijan	ā′-zĕr-bī′-jăn.
Azores	ah-zorz′.
Bab-el-Mandeb	băb′-ĕl-măn′-dĕb.
Bahamas	ba-hă′-mahs.
Bahia Blanca	bah-e′-ah blan′-ka.
Baikal	bī′-kahl.
Baku	bă-koo′.
Balearic	băl-e-ăr′-ik.
Baluchistan	bă-lōō′-chĕs-tăn.
Barbados	bahr-bā′-dōz.
Barranquilla	bahr′-rahn-kēl′-yah.
Basel	bah′-zĕl.
Bassano	bass-săn′-ō.
Basseterre	băss-ĕ-tair′.
Batum	bah-tōōm′.
Bechuanaland	bĕtch-oŏ-ah′-nă-land.
Beirut	bā′-root.
Belize	bel-ēz′.
Belle Isle	bĕl īle.
Benares	ben-ah′-rĕz.
Bengazi	ben-găz′-ē.
Ben Nevis	ben nĕv′-is.
Berar	bĕ-răr′.
Berbera	bĕr′-bĕ-ră.
Bergen	bĕr′-gĕn.
Bhutan	bōō-tahn′.
Bihar	bē′-har.
Blanc	blong (nearly).
Bloemfontein	blŏŏm′-fŏn-tān′.
Boissevain	bŏy′-sĕ-vain.
Bokhara	bō-kah′-rah.
Bordeaux	bōr-dō′.
Boulogne	boo-lōne′.
Brahmaputra	brah-mă-poo′-tră.
Bras d'Or	brah dōr′.
Bremen	brĕm′-en.
Brunei	brōōn-ī.
Brünn	brŭnn (nearly).
Bucharest	bū-ka-rest′.
Budapest	boo′-da-pest.
Buenos Aires	bwā′-nōs īr′-ēs.
Bulawayo	bōō′-lă-wy′-yo.
Burrard	bŭr-rard′.
Butte	būt.
Cadiz	kā′-diz.
Caicos	kī′-kōs.
Cairo	kī′-rō.
Calais	kăl′-ā or kăl′-is.
Callao	kahl-lah′-o.
Caracas	kah-rah′-kahs.
Caribbean	kăr-ib-bē′-an.
Carrara	kă-rah′-rah.
Cartagena	kar-tă-jē′-nă.
Caucasus	kaw′-kah-sŭs.
Cawnpore	kawn-pōr′.
Cayenne	kā-en′.
Celebes	sĕl′-ĕ-bēz.
Chagos	chā′-gōs.
Chaleur	shah-loor.
Chambesi	shăm-bā′-sē.
Chaudière	show-dē-air.
Cheviot	chĕv′-ē-ŭt.
Chignecto	shig-nĕc′-tō.
Chimborazo	chim-bō-rah′-zō.
Choco	chō-kō′.
Chōsen	chō-sĕn′.
Cobequid	kŏb′-ĕ-kwid.
Cobh	cōv.
Cocos	kō′-kōs.
Cologne	kō-lōne′.
Colon	kō-lōne′.
Costa Rica	kŏs′-ta reek′-ă.
Cotopaxi	kō-to-pak′-sē.
Courcelette	koor-se-lĕt′.
Cracow	krăk′-ō.
Culloden	kŭl-lŏd′-ĕn.
Cuzco	koōs′-kō.
Cyrenaica	sī′-rĕn-ā′-că.
Czechoslovakia	chĕk′-ō-slō-va′-kĭ-ă.
Danzig	dăn′-tsik.
Dardanelles	dahr-dă-nĕlz′.
Dar-es-Salaam	dār′-ĕs-sā-lam′.
De Aar	dē′ ăr′.
Deccan	dĕk′-an.
Delhi	del′-hī or dĕl′-i.
Demerara	dĕm-ĕ-rah-rah.
Derby	dĕr′-by or dar′-by.
Dnieper	nē′-per.
Dniester	nē′-ster.
Dominica	dŏm-ĭ-nee′-kah.
Douro	dō′-ū-rō.
Drogheda	drō′-chĕ-da.
Dunedin	dŭn-ē′-din.
Dunvegan	dŭn-vē′-gan.
Durazzo	dū-rad′-zō.
Durban	dŭr-ban′.
Dvina	dwē′-nah.
Ecuador	ek-wah-dōr′.
Elbruz	ĕl-brōōz.
Eritrea	ē-rit′-rē-ă.
Erzerum	ĕr′-zĕr-oom.
Esquimalt	ĕs-kwī′-malt.
Essequibo	ĕs-seh-kē′-bō.
Esthonia	es-thōn′-ia.
Euphrates	ū-frā′-tēz.
Eyre	air.
Faroe	fā′-rō.
Fez	fĕz.
Fiji	fē′-jē.
Fiume	fū′-mā.
Forcados	fŏr-kā-dōs.
Fray Bentos	frī bĕn-tōs.
Fuji-yama	foo-jē-yah′-mah.
Funen	foō′-nen.
Fusan	fū-san′.
Galapagos	găl-ă-pā′-gŏs.
Galatz	gal-atz′.
Garonne	gah-rōn′.
Gatun	gat-oon.′
Genoa	gĕn-ō′-ă.
Glace Bay	glāce bay.
Godavari	gōd-ă′-vā-rē.
Gothenburg	gŏt′-ĕn-burg.
Greenwich	grĭn′-ij or grĕn′-ij.
Grenadines	grĕn-ă-deens′.
Guadalquivir	gwah-dahl-kwiv′-er.
Guadeloupe	gah-dĕ-loop′.
Guatemala	gwa-te-mah′-la.
Guayaquil	gwī-a-kēl′.
Guernsey	gurn′-zē.
Guiana	gī-ă′-nă.
Gumti	gōōm-tē.
Gwelo	gwē-lō.
Hague	hāg.
Haiti	hā′-tĭ.
Hanoi	hah-noi′.
Haverhill	hāv′-ĕr-ill.
Havre	ă-vr.
Hawaii	hah-wī′-ē.
Hawick	kāik.
Hebrides	heb′-rī-dēz.
Hecate	hĕc′-ate.
Hecla	hĕk′-lă.
Hejaz	hed′-jăzz.
Herat	hĕ-raht.′
Herculaneum	hĕr-cū-lā′-nē-ŭm.
Himalaya	hĭ-mah-lā′-yah.
Hindu Kush	hin′-doo kōōsh′.
Honduras	hŏn-dū′-răs.
Honolulu	hŏn-ō-lōōl-′ōō.
Hooghly	hōō′-glē.
Hyderabad	hy′-dĕr-ă-băd.
Illinois	ĭl-lĭ-nois′.
Iquique	ē-kē′-kā.
Irak	ē′-răk.
Irkutsk	ĭr-kōōtsk′.
Iroquois	irr-o-kwoi′.
Irawaddy	ĭrr-ah-wah′-di.
Islay	ī′-lā.

Jaegersfontein	yā′-gĕrs-fŏn-tān.
Jelalabad	jĕl-ăl-ă-bad′.
Jena	yā′-nah.
Johannesburg	yō-hahn′-nes-burg.
Juan de Fuca	wan dā foo′-ka.
Juan Fernandez	jōō′-an fer-nan′-dez.
Juneau	jū-nō′.
Kabul	kah-bool′.
Kafue	kăf-ū-ĕ.
Kaiser Wilhelm's Land	kī-zĕr vĭl-hĕlm's land.
Kalahari	kăl-ă-hăr′-ē.
Kalat	kă-laht′.
Kamchatka	kăm-chăt′-kă.
Kaministikwia	kăm-ĭn-iss′-tĭ-quē-ă.
Kandahar	kăn-dă-hăr′.
Karachi	kă-ră′-chē.
Karakoram	kă-ră-kō′-rŭm.
Katrine	kăt′-rin.
Keijo	kāy′-jō.
Kenora	kĕ-nō′-ra.
Kenya	kĕn′-yă.
Kermandec	kĕr-măn-dĕk′.
Khartum	kahr-tōōm′.
Khasi	kăs′-ē.
Khiva	kē′-vah.
Khyber	kī′-bur.
Kiel	keel.
Kiev	kē′-ev.
Kilauea	kē-lou-ā′-ă.
Kilimanjaro	kĭl-ē-măn-jā′-rō.
Kilindini	kil-in-dē′-nē.
Kirghis	kĭr′-gēz.
Kirthar	kĭr-′thăr.
Kobe	kō′-bĕ.
Kra	krā.
Kronstadt	krŏn′-shtat.
Kuen-Lun	kwen-loōn′.
Kyoto	kyō-tō.
Labuan	lă-bū-ăn′.
Lachine	lah-sheen′.
Lagos	lā′-gŏs.
La Guaira	lah gwī′-rah.
Leicester	lĕs-tĕr.
Leipzig	līp′-sik.
Pas, The	păh.
Leven	lĕv′-en.
Levis	lĕv′-ĭs.
Lhassa	lhah′-sah.
Liard	lee′-ărd.
Liechtenstein	lĭk′-ten-shtīn.
Liége	lē-ĕzh.
Lille	lēl.
Lima	lē′-măh.
Limoges	lē-mōzh′.
Lithuania	lith-ū-ā′-ne-ă.
Llandudno	lăn-dŭd′-no.
Loire	lwahr.
Lomond	lō′-mŭnd.
Long Sault	long soō′.
Lorraine	lŏr-āne′.
Los Angeles	lōs an′-jel-ez.
Lourenco Marques	lō-rĕn-sō măr′-kĕs.
Lucerne	lū-sĕrn′.
Lucknow	lŭk′-now.
Luderitz Pequena	lōōd′-ĕr-itz pĕk-ē′-nă.
Luzon	lōō′-zŏn.
Lyon	lē-ong (nearly).
Madagascar	mad-ah-gas′-kahr.
Mafeking	măf′-ĕ-king.
Mafia	măh-fē′-ă.
Maggiore	mahd-jō′-rā.
Magnetawan	măg-nĕt′-ă-wăn.
Malacca	mah-lăh-′ka.
Malar	mā′-lăr.
Malay	mah-lā′.
Malpeque	mahl-peck′.
Manaos	măn-ah′-ōs.
Manila	mah-nĭl′-a.
Maracaibo	mah-rah-kī′-bō.
Maree	mar-ē′.
Marienbad	ma-rē′-en-bad.
Maritza	mah′-rĕ-tsa.
Marmora	mahr′-mŏ-ră.
Marne	mărn.
Marquesas	măr-kay′-săs.
Marseille	mahr-sā′-ye.
Martinique	mahr-tĭ-nēk′.
Maseru	măh-sĕr-ōō′.
Massawa	mass-ā′-ă.
Matadi	mă-tay′-dē.
Mattawa	mat′-ta-wă.
Mauna Loa	mŏw′-nă lō′-a.
Mauritius	maw-rish′-ĭ-us.
Mbabane	măh′-bane.
Medina	mā-dē′-nah.
Melanesia	mĕl′-ăn-ē-sha.
Melbourne	mĕl′-burn.
Mersey	mĕrz′-ey.
Merthyr Tydfil	mĕr-thĕr tĭd′-vĭl.
Mesopotamia	mĕs′-o-po-tām′-i-a
Messina	mĕs-sē′-nah.
Meuse	mūz.
Michel	mĭsh-el′.
Michipicoten	mish-ĭ-pĭ-kō′-ten.
Milan	mĭl-ăn′.
Minas	mī′-nas.
Mindanao	min-da-nāh′-o.
Miquelon	mĭk-ĕ-lŏn′.
Miramichi	mĭr-a-mĕ-shē′.
Missouri	mis-zōō′-rē.
Mocha	mō′-kah.
Moluccas	mō-lŭk′-kăz.
Mombasa	mŏm-bah′-sah.
Monaco	mon′-ah-kō.
Monastir	mon′-as-tēr.
Monongahela	mŏn-ŏn′-gă-hē′-lă.
Monte Carlo	mon′-tĕ car′-lō.
Montevideo	mon′-tē-vĭd′-ē-o.
Montserrat	mŏnt-sĕr-răt′.
Morecambe	mōr′-kăm.
Moscow	mŏs′-kō.
Mozambique	mō-zăm-beek′.
Munich	mū′-nik.
Murrumbidgee	mŭr-rŭm′-bĭd-gee.
Nagasaki	nah-gă-săh′-kē.
Nairobi	nī-rōb′-ē.
Nanaimo	nan-ī′-mō.
Narbada	măr-băd′-ă.
Nassau	nas′-saw.
Natal	nā-tahl.
Neagh	nā.
Nepal	nĕ-pawl′.
Nevis	nē′-vis.
Newark	nū′-ĕrk.
Newfoundland	nū′fŭnd-land′.
New Orleans	nū ŏr′-lē-ans.
Nicaragua	nik-ah-rah′-gwah.
Nice	nēs.
Nicobar	nĭk-ō-bahr′.
Nicosia	nē-co-zē′-a.
Nilgiri	nĕl-gĕr′-ī.
Nipigon	nĭp′-ĭ-gon.
Nipissing	nĭp′-is-sing.
Nizhni Novgorod	nēzh′-nē nov′-gŏ-rod′.
Norwich	nŏr′-ich.
Nuremburg	nōōr′-em-bōōrg.
Nyasaland	nē-ahs′-sah-land.
Oder	ō′-der.
Odessa	ō-dĕs′-să.
Ojibway	ō-jib′-way.
Okanagan	ō-kăn-ah′-găn.
Okhotsk	ō-kŏtsk.
Oklahoma	ō-klă-hō′-mă.
Omahika	ōm-ă-hē′-kă.
Omsk	ŏmsk.
Orissa	ō-rĭs′-să.
Orizaba	ō-rĕ-sah′-bah.
Osaka	ō-zah′-kah.
Oslo	ŏs′-lō.
Otago	ō-tā′-gō.
Otonabee	ō-tŏn′-a-bee.
Ouse	ōz.
Outremont	ōō′-ter-mont.
Ozark	ōz′-ark.
Pamir	pah′-mēr′.
Papua	pap′-oo-ă.
Para	pah-rah′.
Paraguay	pah-ră-gwā′.
Paramaribo	păr-ă-măr′-ĭ-bō.
Patagonia	păt-ă-gō′-nĭ-a.
Patkai	păt′-kī.
Pechora	pah-chō′-ra.
Peking	pē-king′.
Pelée (Mount)	pē-lā′.
Pelee	pĕl′-ē.
Penobscot	pĕn-ŏb′-scŏt.
Perak	pā′-răk.
Perim	pĕ-rēm′.
Pernambuco	pĕr-năm-bōō′-kŏ.
Peru	pĕ-roo′.
Petitcodiac	pet′-ē-kō-dē-′ak.
Philippines	fil′-ip-pin.
Philippopolis	fĭl-lip′-pop′-ō-lĭs.
Phoenicia	fĕ-nĭsh′-ă.
Phoenix	fē′-nix.
Piedmont	pēd′-mont.
Pietermaritzburg	pēter-măr′-itz-burg.
Piraeus	pī-rē′-us.
Pisa	pē′-zah.
Plata	plah′-tă.
Point du Chesne	point du shain.
Polynesia	pŏly-nē′-sha.
Pompeii	pŏm-pā′-yē.
Ponoka	pō-nō-′kă.
Popocatepetl	pō-pō-kăh-ta′-pĕt'l.
Portage La Prairie	pōr′-tage la prā-rē.
Port au Prince	pōrt ō prins′.
Porto Rico	pōr′-tō rē′-kō.
Port Said	port să-ēd.′
Posen	pō′-zen.
Potomac	pot-ō′-mack.
Potosi	pō-tō-sē′.
Prague	prāg.
Pretoria	prē-tō′-rē-ah.
Pribilof	prĭb′-ĭ-lŏf.
Pruth	proot.
Pueblo	pwĕb′-lō.
Puerto Barrios	pwĕr′-tō barr′-ĕ-ōs.
Puerto Cabello	pwer′-tō kă-bĕl′-lō.
Puerto Plata	pwer-tō plah′-tă.
Puget	pūj′-et.
Punta Arenas	poon′-tăh ah-rā′-nahs
Pyrenees	pĭr′-ĕ-nēz.

Qu'Appelle	kăp-pĕl′.
Quetta	quĕt′-tă.
Quinte	quin′-tē.
Quito	kē′-tō.
Rainier	rā′-nēr.
Reims	rēmz.
Reykjavik	rī′-kyah-vĕk.
Restigouche	rĕs-tĭ-goōsh′.
Revel	rĕ′-vel.
Rhodesia	rō-dē′-zya.
Richelieu	rē-shĕ-loo′.
Rideau	rē-dō′.
Riga	rē-gah′.
Rio Grande	rē′-ō grahn′-dē.
Rio de Janiero	rē′-ō dā zha-nār′-ō.
Rio de Oro	rē′-ō de ō-rō.
Rio Muni	rē-o mūn′-ē.
Riverina	riv-er-ē′-nă.
Riviera	rē-vē-ā′-rah.
Rochdale	rosh′-dāle.
Roseau	rō′-sō.
Rouen	rōō′-ong (nearly).
Rouyn	rōō′-in.
Ruwenzori	rū-wĕn-zōr′-ē.
Saanich	săn′-itch.
Saar	săhr.
Saguenay	sag-ĕ-nā′.
Sahara	săh-hah′-rah.
Saigon	sī-gōn.
St. Croix	sānt crwa.
St. Etienne	sānt ĕt-yen.
St. Gothard	sānt gŏth′-ărd.
St. Helena	sānt hĕl-ē′-na.
St. Helier	sānt hĭl-yĕr.
St. Henri	sānt hŏn-rē.
St. Hyacinthe	sānt hī′-ă-sinth.
St. Julien	sānt jūhl′-yan.
St. Lucia	sānt looch′-ē-a.
St. Maurice	sānt mō-rēs.
St. Pierre	sānt pē-ār′.
St. Roque	sahn rōk.
Ste. Anne de Beaupré	sānt ann de bō-prāy.
Ste. Anne de Bellevue	sānt ann de bell′-vū.
Salisbury	sawls′-bŭry.
Salonica	să-lō-nē′-kă.
Samarkand	săm′-ăr-kand.
Samoa	sah-mō′-ă.
San Juan	sahn hōō-ahn′.
San Marino	sahn măr-ē′-nō.
Santa Cruz	sahn′-ta crōōz.
Santa Fe	sahn′-ta fā.
Santiago	sahn-tē-ah′-gō.
Santo Domingo	sahn′-to dōm-ing′-o.
Santos	sahn-tōōsh.
Sao Paulo	sāh-ō pou′-lō.
Sao Salvador	sah-o săl′-vă-dōr.
Sarawak	săr′-a-wăk.
Saskatoon	sas′-kă-toon.
Sault Ste. Marie	sōo sānt mā-ree.
Savaii	săv-ā′-ē.
Scheldt	skĕlt.
Scutari	skōō-tă-rē′.
Seebe	sē-bē.
Seine	sān.
Sekondee	sĕk-on-dē′.
Selangor	sĕl-ăn-gor′.
Seoul	sā-ōol′.
Sevastopol	sē-văs-tō-pŏl′.
Seville	sē-vĕl′ or sev′-il.
Seychelles	sā-shĕl.
Shanghai	shang-hī′.
Shat-el-Arab	shat-el-ă-′rab.
Shawinigan	shah-wĭn′-ĕ-găn.
Shirwa	shĕr′-wah.
Sierra Leone	sē-ĕr′-rah lē-ō-′nē.
Sierra Nevada	sē-ēr′-rah nĕ-vah′-dah
Simplon	săn-plŏn.
Singapore	sing′-gă-pōr′.
Sinkiang	sĭn-kī-ang′.
Socotra	sō-kō′-tră.
Sofia	sō-fē′-ă.
Solent	sō′-lent.
Somaliland	sō-mah′-lē-land.
Sombrero	sŏm-brē′-rō.
Sorel	sō-rĕl′.
Soufrière	souf′-rē-air.
Souris	sōōr′-ĭs.
Spitzbergen	spēts-bĕr′-gĕn.
Spokane	spō-kăn′.
Srinagar	srē-nā-găr′.
Stellenbosch	stĕl′-lĕn-bŏsh.
Stikine	stĭc-ēn.
Strasbourg	strahs′-boŏrg.
Sucre	soo′-krē.
Sudan	sŏŏ-dahn′.
Suez	sōō′-ĕz.
Sulaiman	sōō-lă′-ĕ-mahn′.
Sumatra	soo-mah′-tră.
Susquehanna	sŭs-quē-hăn′-nă.
Suva	sū′-vă.
Swaziland	swāzy-land.
Syracuse	sĭr′-ah-kūs.
Syr-Daria	sĭr-dă′-rē-ă.
Tabriz	tă′-brēz.
Tacoma	tă-cō′-mah.
Tampico	tăm-pē′-kō.
Tanganyika	tahn-ghan-yē′-kah.
Tangier	tahn-jēr′.
Tapti	tăp′-tē.
Tarawera	tără-wē′-ră.
Taumotu	tau-mō′-tū.
Tegucigalpa	tĕ-gōō-se-gal′-pa.
Teheran	tā-hĕ-ran′.
Temagami	tĕm-ag′-ă-mē.
Thian Shan	tī′-ăn shan.
Tientsin	tē-en′-tsĕn.
Tierra del Fuego	tē-ĕr′-rah del fwā′-go.
Tiflis	tif′-līs.
Timaru	tim-ā′-roo.
Timbuktu	tĭm-bŭk′-too.
Timiskaming	tĭm-ĭs′-kă-ming.
Tirana	tē-rā′-nă.
Titicaca	tē-tē-kă′-kă.
Tobago	tō-bā′-go.
Tokyo	tō′-kē-ō.
Tomsk	tŏmsk.
Tonga	tōn′-gă.
Tormentine	tor′-men-tīne.
Toulouse	toō-looz′.
Trebizond	trĕb′-ĭ-zond.
Trieste	trē-ĕst′.
Trinidad	trĭn-ĭ-dăd′.
Tripoli	trĭp′-ō-lē.
Tripolitania	trĭp-ŏl-ĭ-tān′-ē-ă.
Tristan da Cunha	trĭs′-tăn da cūn-hă.
Tromso	trōms′-ū.
Tucson	tōō-sōn.
Tula	tōō′-la.
Tunis	tū′-nĭs.
Turin	tū-rin′ or tūr′-in.
Turkestan	tōōrk-ĕ-stăn′.
Tyrol	tĭr′-ol.
Uganda	ōō-găhn′-dă.
Uish	wish.
Uitenhage	wē-ten-hăg′-ĕ.
Ujiji	ōō-jē′-jē.
Ukrainia	ōō-krān′-ia.
Umsinduzi	ŭm-sĭn-dooz′-ī.
Ungava	ŭng-gah′-văh.
Upolu	ōō-pō′-lōō.
Upsala	ŭp-să′-lă.
Ural	ū′-ral.
Uramia	ū-rām′-ĕ-ă.
Urga	ōōr′-gah.
Uruguay	ōō-rōō-gwē′.
Utrecht	ū′-trĕkt.
Vaal	văl.
Valdai	vahl-dī′.
Valdeau	vahl-dō′.
Valencia	vah-lĕn′-shĕ-a.
Valetta	văl-ĕt′-tăh.
Valparaiso	vahl-pah-rī′-sō, or zō.
Vegreville	vā′-gĕr-vĭl.
Venetia	vĕn-ē′-sha.
Venezuela	vĕn-ĕz-wē′-lah.
Vera Cruz	vĕr′-ah krōōz.
Verdun	ver-dŭn′.
Versailles	vĕr-sālz or vĕr-sāh-ē.
Vesuvius	vē-sū′-vī-ŭs.
Viking	vī′-king.
Vilna	vēl′-nă.
Vimy	vē′-mē.
Vistula	vis′-tū-la.
Viti Lavu	vē-tē lă′-vu.
Vladivostok	vlah-dē-vŏs-tŏk′.
Wadai	wăd′-ī.
Waikato	wī-kā′-to.
Walfish	wŏl′ fish.
Wanganui	wan-gan′-u-ē.
Weihaiwei	wā-hī-wā.
Weser	vā′-zer.
Wetaskiwin	wĕ-tăs′-kĭ-wĭn.
Willamette	wĭll-am′-ĕt.
Witwatersrand	vĭt-văt′-ers-land.
Wolseley	wŏls′-lĕy.
Woonsocket	wōōn-sŏck′-ĕt.
Worcester	wōōs′-ter.
Wrangell	rang′-ell.
Wyoming	wī-ō′-ming.
Yangtze	yang-tzē′.
Yarkand	yar′-kănd.
Yemen	yĕm′-en.
Yenesei	yĕn-ē-sā′-ē.
Yokohama	yō-kō-hăh′-măh.
Yosemite	yō-sĕm′-ĭ-tē.
Yucatan	yōō-kăh-tahn′.
Yugoslavia	yōō′-gŏ-slă′-vī-ă.
Zambesi	zahm-bā′-zē.
Zanzibar	zahn-zĭ-bahr′.
Zealand	zē′-land.
Zuider Zee	zī′-dĕr zē.
Zurich	tsōō′-rik.

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